

THE IRON AGE

New York, August 6, 1931

ESTABLISHED 1855

VOL. 128, No. 6

WILL WAGE REDUCTIONS PROMOTE BUSINESS REVIVAL?

By JOSEPH L. SNIDER

THE persistence of the business depression has brought a growing agitation for wage reductions. A matter of such grave concern not only to wage earners but also to business executives and the public at large has naturally incited a vehement controversy.

Up to the present, wage rates have been maintained surprisingly well during this depression. Although, to be sure, numerous reductions have been made, they have been less frequent and much less drastic than during former depressions. This has been due to the belief, held quite generally during recent years, that high wages are conducive to prosperity, and also to the resolutions made a year and a half ago under President Hoover's leadership that wages would not be reduced in the current emergency. But the depression has become so unexpectedly severe that wage reductions have become more numerous during recent months and agitation for widespread downward revisions, a thoroughgoing readjustment of labor costs, has gained considerable momentum.

Do Wage Cuts Stimulate Buying?

The publisher of our leading financial newspaper, in a recent radio address, expressed his conviction that "resistance to inevitable wage adjustments is

an important obstacle to business recovery." He elaborated his view as follows:

Suppose a shoe manufacturer has a thousand employees. In prosperous times he makes shoes to retail at \$4 a pair and pays his employees \$5 a day. Now he finds that people will not pay \$4 for his shoes. If he cannot make shoes to sell for less, he must close his factory. He does find that people are willing to buy the same shoes at \$3.50 a pair and that he can make shoes to sell at that price on a wage scale of say \$4 a day. Which is better—a closed factory, a thousand unemployed and continued business depression at a theoretical \$5 a day, or a factory running, a thousand people working, and business revival at an actual \$4 a day? . . . There is no practical limit to the demand for products of industry except the price to the consumer. . . . General industrial prosperity will return just as soon as all goods are priced at a figure that the final consumer is willing to pay. In many important lines the only remaining obstacle to such pricing is the insistence of labor leaders that wage scales established in a period of the greatest general prosperity shall not be diminished one iota, even though the cost of living has already fallen over 10 per cent.

Quite in the opposite vein is the following statement by the industrial commissioner of the State of New York, reported in the financial press a few

AS the depression has increased in duration prevailing opinion on wages has undergone a marked change. At the time of the Hoover conferences there was general adherence to the view that wages should be maintained, since a cut in the income of workers would mean a proportionate reduction in purchasing power. Today many advocate wage reductions as a means of stimulating buying and increasing employment.

The thesis of the wage deflationists is carefully examined by the author, who is associate professor of business statistics at Harvard University. He comes to the conclusion that their contentions are not well founded. Wage reductions, in his opinion, cannot be justified on the ground that they will stimulate business revival. He admits, however, that they may be dictated by necessity.



months ago: "The industries that cut wages defeat their own ends. The purchasing power must be kept up where the wage-earning class will find it easy to buy the things the manufacturer wants to sell."

Both of these positions cannot be sound. On one side, it is maintained that wage rate reductions will increase employment and will permit commodity price reductions, which in turn will stimulate purchasing and consequently promote general business revival. On the other side, it is maintained that wage reductions will curtail purchasing power—and purchases—and therefore retard rather than promote business revival. Where does the truth lie? Is one position sound and the other faulty or do both fail to give a correct answer to the wages problem? The following discussion represents an attempt to throw a little light on these questions.

The reasoning in support of the view that wage reductions will stimulate buying by consumers, hence promoting business revival, takes as its starting point the fact that wage payments are a cost of production in industry. Consequently, if wages can be reduced costs of production will decline. As the next step in the reasoning, lower costs of production will mean lower selling prices. Finally, lower prices will attract consumers whose increased purchases will stimulate business.

Price Reductions Discourage Purchases

In examining this reasoning let us begin with the later steps in the argument and work back. First of all, then, will lower prices tempt consumers to purchase in greater volume? If the answer is "Yes!" then, of course, business revival will be promoted; but, if the answer is "No!", business revival will not be promoted but will in all probability be retarded. It will be helpful to distinguish between the probable reaction of consumers in the long run during more or less normal business conditions and their probable reaction in a business depression.

In the former situation price reductions may be expected to stimulate buying, the extent of the increase depending on the character of the demand for the commodity in question. But in a severe business depression price reductions are rather more likely to discourage large-scale buying than to bring it about. While prices are falling many buyers hold off entirely and others buy only their minimum requirements, with the hope that they may be able to fill their needs later at even lower levels. In the judgment of consumers whose income has declined and who are fearful of the future goods have not got on to the bargain counter so long as there is a good chance that they will be cheaper tomorrow.

As a matter of record, while prices have been falling sharply month by month during this depression, buying has also dwindled. Our standard statistical measures of wholesale and retail prices and of wholesale and retail trade have shown concurrent declines. Inventories, especially in the hands of consumers, must be worn down to the irreducible minimum and the belief that prices have reached their bottom must become widespread before large-scale buying can be expected.

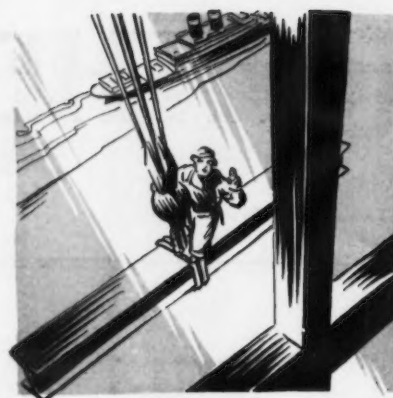
Proceeding further with the examination of the above reasoning, will wage reductions be accompanied necessarily by price reductions? Although, to be sure, wage reductions will mean lower

costs of production, it cannot be assumed that producers will pass along, in the form of lower prices, the savings in costs. In the long run, lower costs bring lower prices, where competition among producers is effective. But in the emergency of business depression developments do not necessarily work out as they do in the long run. Such savings in costs of production as would result from wage cuts will represent an immediate and certain improvement in the financial condition of the producers concerned. On the other hand, if the savings in costs are passed on in the form of lower prices, improvement in financial condition will not be immediate and not certain since the producers will benefit only in the event that lower prices stimulate buying.

Lower Prices Do Not Necessarily Follow Wage Cuts

To illustrate in a simplified fashion: Let us assume that a manufacturer has reduced wage rates to such an extent that during the ensuing year his wages bill will be reduced by \$1,000,000. If he makes no change in the selling prices of his products, the saving of \$1,000,000 in his costs of production will represent a corresponding addition to his earnings. Now, on the other hand, let us assume that he decides to pass along to the consumers, in the form of lower prices, the \$1,000,000 saved through wage cuts. If the consumers do not increase their purchases, the manufacturer has not profited at all as the result of wage cuts. His costs will be \$1,000,000 less during the ensuing year, but his sales volume at the lower prices will decline correspondingly. If, however, the lower prices tempt the consumers to increase their purchases (in physical units) by an amount sufficient to represent the same sales volume (in dollars) to the manufacturer as formerly, the manufacturer is just as well off, but no better than if he had not passed along the savings from his wage cuts in the form of lower prices. Only if lower prices bring about a considerable increase in buying by consumers—so much that sales volume will actually be larger than formerly—will it be clearly to the advantage of the manufacturer to reduce prices following wage cuts.

Whether or not manufacturers will profit by passing wage reductions on in the form of lower prices is, therefore, at least problematical. If selling prices are reduced, the certainly realizable benefits from wage cuts will be given up in the hope of securing greater, but uncertain, benefits. At a time



of depression the benefits which are sure are at a premium. Moreover, as was indicated above, the probabilities are very much against an increase in buying as a result of lower prices. It would appear unwarranted, therefore, to assume that manufacturers in general will reduce selling prices as a result of wage cuts.

Prices Can't Be Lowered in Proportion to Wage Cuts

But even more important, in considering the influence of wage reductions upon business revival, is the fact that wage cuts will reduce purchasing power because prices *cannot* well be lowered in full proportion to wage cuts. This is by reason of the basic fact that wage payments are only a part of the total costs of production. Raw material costs, interest, taxes, advertising and all other costs will not come down because of wage cuts, but they must all be covered by the selling price. If wage payments represent 50 per cent, let us say, of the total costs of production, then a 10 per cent wage cut will permit only a 5 per cent reduction in selling prices.

To illustrate this, let us assume that one day's output of a factory is one unit, which sells for \$10, that the day's output is produced by one worker who is paid \$5 for his day's work, and that the wage cost is 50 per cent of total cost of production. Let us assume also, for simplicity, that the selling price just covers the cost of production without leaving a profit—not a rash assumption in depression. The production costs are thus \$10 and are divided equally between wage payments and all other costs (raw materials, etc.). Now, if wages are reduced 10 per cent, that is 50c., the total cost of production will fall to \$9.50. The selling price might be lowered to \$9.50, but no further, while the wage payment will fall, of course, to \$4.50. Quite clearly, the purchasing power of the worker with reference to the output of the factory will be reduced. Before the wage cut he could buy the unit of output with two days' work (\$10 price and \$5 wage) but after the wage cut he cannot do so (\$9.50 price and \$4.50 wage).

Wage Deflation Means Reduced Buying Power

We may make the generalization from this simplified case that the purchasing power of the wage earners of the country will be reduced by widespread wage cuts, even though selling prices are

reduced by the full amount possible as the result of wage cuts. We may reach the further conclusion, also, that actual purchases by the total body of consumers will tend to be reduced. This appears probable



not only because the wage earners constitute the largest group of consumers, but also because other consumers not included in the wage-earning group will not be tempted by the price reductions to add materially to their purchases. Many of these buyers may in fact be repelled by price reductions, and others, those having great resources, will not be influenced appreciably by the lower prices, since they customarily buy what they care to use largely irrespective of price.

The proposition that wage reductions will stimulate buying of commodities thus appears to rest upon unsound assumptions and faulty reasoning. In a period of severe depression, when fear is the dominant emotion, price reductions are more likely to intensify the practice of buying to cover minimum requirements only, rather than to call forth buying in increased volume. Moreover, the probabilities are that selling prices will not in fact be reduced appreciably as a result of wage cuts, since in a period of business distress manufacturers will be reluctant to pass along, in the form of lower prices, the savings in costs actually realized through wage cuts. And most important, since wages are only a part of the total costs of production in industry and since, on this account, selling prices cannot well be lowered in proportion to wage cuts, a general reduction of wages will reduce purchasing power and, consequently, tend to retard rather than stimulate buying.

Related to the argument that wage reductions will stimulate buying is the argument that wage reductions will increase employment. Which is better, it has been asked, to maintain high wage rates with many factories idle due to the inability to operate with such high labor costs, or to have these factories running with lower wage rates? There may be a number of individual plants now shut down which could resume operations with a substantial wage reduction. Wage reductions in these cases might indeed be desirable, but the number employed throughout the country would be increased only very slightly thereby.

Necessity May Dictate Wage Revisions

If, therefore, further wage reductions are put into effect during the coming months—and they may be—let them not be justified as a stimulus to business revival. Necessity may perhaps dictate reductions. It is obvious that a plant which has suffered a drastic reduction in its output and in its prices, and which is operating at a loss, cannot continue to do so indefinitely. A wage cut may mean a sufficient reduction in costs of production to permit the company to operate profitably. Whether it does or not, the persistence of operations at a loss will sooner or later force the plant to take any means possible to cut down its costs. Many forward-looking and socially-minded employers are hoping that business revival may come before it seems necessary to make wage cuts, but they are also fully aware that the time may come when cuts can no longer be postponed. Such employers face possible wage reductions squarely as a matter of hard necessity and are not claiming that wage cuts will increase buying or employment or contribute to business revival.



Photograph by John P. Mudd for the Midvale Co.

WHAT SIZE SHOULD THE STEEL INGOT BE ?

By JOSEPH R. MILLER
Cleveland

A PROPER determination of the sizes in which the ingots are to be cast is a first consideration in the layout of the equipment and practice of a steel mill, for not only convenience in operating the plant but also tonnage and quality of product hinge upon the ingot sizes selected.

Advantages to be gained by the employment of ingots larger than the sizes necessary for the product to be rolled are mostly involved in the fact that fewer ingots, in large size, need be poured and handled, which tends toward greater production and lower cost, with fewer movements and less trouble in a general way in operating. Other advantages may accrue in connection with the allowance of the proper amount of reduction and working in the rolling of large sections.

However, in each plant there is a limit to the ingot sizes to be used for the various products, beyond which the advantages are outweighed by the disadvantages, and so it becomes expedient to limit the ingot size. It is expedient also to maintain as few sizes as possible, thus to limit the amount of equipment and the attendant complication of handling both the equipment and the ingots.

Each Plant Has Its Own Problem

Setting the ingot size for any rolled section in a particular mill is an individual problem and a number of considerations enter into its solution. One of these is the ability to cut the product of the ingot to proper lengths, avoiding shorts (too short to re-roll). After this is satisfied, in connection with the determination of the amounts of top and bottom crop, other considerations involve the quality of the steel, the convenience for the passes in rolling and the capacity of the mill arrangement for handling long lengths (before cutting).

Determination of the top and bottom crops depends upon the severity of the specifications and upon the quality desired in the rolled product. The different grades of steel also have an influence upon this cropping, and ingot sizes and shapes are designed to reduce the effects of segregation in high-carbon and other steels which are prone by nature to segregate.

While there are many variations from any set practice, it is the rule to cast high-carbon and other high-metalloid steels in ingots of moderate size, and of rectangular instead of square section, in an effort to hasten the solidification and to arrest segregation of carbon, phosphorus and sulphur, particularly. The high-metalloid steels are liquid at a lower temperature and therefore stay liquid longer than soft steels, and so the segregation has full opportunity to take place in large ingots, while with a moderate-size ingot of rectangular section the cooling is hastened, and the segregation therefore does not proceed so far. In this way a greater yield may be procured.

In the case of soft steels the objection to a large ingot is not so pronounced, as the steel is not liquid so long by its nature. However, too large size tends very strongly to soft, mushy centers, which in subsequent hot working often prove to be too weak and show all the effects of a deep piping. This shows up particularly in press forging of large pieces.

Large-size ingots are more frequently observed to crack, due to the unequal cooling strains, and this results in rejections for surface flaws in the billets or blooms and in the finished product. There is a variance of opinion on this point, but, on the whole, the rule is accepted after many observations and variant results from observations made of special cases or special plant practice.

Usually it is the practice, or rather the history, of the plant to start with small or medium-sized ingots and work up to larger sizes. This has an advantage in that the size that best meets the conditions can be determined by practice.

Examples of Ingot Sizes in Use

Some of the ordinary ingot sizes in use are as follows: The new rail mill of the Weirton Steel Co. has adopted the 22 x 24-in. ingot, which is standard for the Weirton plant. The rail and structural mill of the Inland Steel Co. employs a very large ingot—being now 27 x 29-in., weight 8 tons. The product, a rail blank, is cut into two parts and reheated before finishing, as the section becomes too cold to hold shape and dimensions if rolled direct.

At both plants of the Jones & Laughlin Steel Corporation a 19 x 22-in. ingot is in use on all classes of product, an 18 x 18-in. ingot with bottle top is employed at the South Side works for the 40-in. three-high blooming mill particularly, and a 25 x 25-in. for large sections. At the rail mill at Gary rails are rolled direct without reheating from 23 $\frac{1}{4}$ x 23 $\frac{1}{4}$ -in. ingots, and other products of the Gary works from various sizes of ingots.

A very good general-purpose ingot is 22 x 24-in., weighing around four tons, or even a 20 x 22-in. ingot may serve most purposes. Large shapes will require a special ingot and it is not possible to get along with one size at all times if the plant rolls a diversified product. Two general sizes, however, often will be sufficient and the larger should be rectangular in cross-section. It is always highly desirable to limit the number of sizes to a minimum, as it is expensive to carry odd sizes of molds, etc., and hard to have them in the proper condition for pouring.

Factors Influencing Design of Ingots

Ingot design is dependent upon broad experience for its rules, and no one without that experience can hope to design a proper ingot shape. In fact, even in plants where that experience is available improper designs are found, and changes are made with much caution, as the field of ingot design is uncharted. The difference in the dimensions of rectangular shapes is usually thought to be best set at 2-in. The radius inside the corners, it is found by trial, should not be too large, or the corners will crack in rolling. This radius if too small affects the mold life; however, this is the lesser evil. It is often made 2-in. with success.

Taper from top to bottom of the mold section is a variable, also. If too little, the ingot will not strip after the mold surface becomes a little rough; the life of the mold is shortened and the number of sticker ingots is increased. If too great, the tendency to deepen the pipe and to secondary piping is noticeable. This is often made 1 $\frac{1}{2}$ -in. total, with success. Height of ingot in comparison with the cross-sectional dimensions is very important, within somewhat liberal variations. It is, of course, necessary to pour different heights of ingots in the same mold to produce the proper amount of good steel in cut lengths. However, too long an ingot will contain too great an amount of the secondary piping, and too short an ingot will con-

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WHETHER an ingot should be made large, to permit a great deal of mechanical work on the steel in the mill, depends upon what is to be made. Beyond a certain size an increase appears undesirable. On the other hand, too small an ingot, even for a small product, means too great complication in handling and consequently excess cost of production. Some of these limiting considerations are analyzed in this article.

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tain too great an amount of primary piping and top crop in proportion to the good steel. But these variations are beyond the variations required in varying the heights for cutting.

How Much Mechanical Work on the Steel?

There is a supposition that it requires an extra-large ingot to produce large and heavy sections, so that sufficient hot work may be done on the steel. This is true to a certain degree only, for, after a certain amount of reduction has been accomplished, the working has been sufficient and further increase in the ingot size is not necessary. This is especially the case when billets are reheated for finishing, and also with billets and blooms that are reheated and forged. In fact, the manner of the reheating has as much to do with the final state of the steel as the amount of the reductions taken.

A considerable amount of experimental work has been done on this subject of the amount of reduction necessary to make good forgings, and a negative conclusion is drawn—that it is possible to overdo it, in that the extra-large ingot employed is inferior in its structure and internal conditions. Not so much work has been followed up with rolled sections, as it is the practice for the most part to follow the roll pass design and allow metal to fill properly. For instance, at one mill, 24-in. I-beams are rolled from 25 x 25-in. ingots.

Occasionally a specification calls for a definite amount of minimum reduction. This is on round and square bars of large section for the most part, and it is on these sections that the condition of the metal is hardest to control. Often on the large bars the metal is coarse grained and irregular, and must be improved by annealing similarly to a casting, so that there is a reason for taking precautions in specifications to secure the proper amount of hot work.



NEAR end of assembly line two inspection pits, each 30 ft. long, have been constructed for final inspection of under sides of chassis and body. ▲ ▲ ▲

SAVING IN COSTS FROM NEW PLANT ARRANGEMENT

By BURNHAM FINNEY
Detroit editor, *The Iron Age*

REARRANGEMENT of production facilities and installation of new equipment have increased efficiency 30 per cent in building trucks at the plant of Dodge Brothers, Inc., Detroit. By spreading out the work and making the changes gradually, the company made the revision without interfering with manufacturing operations.

Among the major improvements are a relocation of the final assembly line, thus reducing substantially the handling of materials; a chain conveyor to carry bodies along the body assembly line; substitution of lacquer for enamel in finishing truck chassis, thereby cutting down the amount of space needed for this work; cold-yoke equipment for riveting the chassis frame; a new process of drying freshly-painted truck bodies and cabs; and bonderizing of all sheet-metal parts to protect them from rust and from subsequent peeling or curling of the paint or enamel.

In its former position the final assembly line paralleled the west side of the building, so close to the wall that it was impossible to store material on both sides, necessitating extra handling of parts from the storage side of the line to the other. Relocation of the assembly line has rectified this situation, enabling workmen on both sides of the line to have materials within easy reach. It is estimated that this change has resulted in a saving of 60 per cent in handling parts.

Under the old system the workman along the body assembly line pushed the body by hand to the next operation after finishing his particular job. This sometimes meant pile-ups, with serious delays. Installation of a chain conveyor has saved 20 per cent in time and doubled the efficiency of the line.

Prior to being bonderized or enameled, sheet-metal parts are put through an automatic washing machine and drying oven. The loading end of the oven adjoins the receiving dock where materials are brought into the plant. Parts are placed by hand on a roller conveyor which carries them through a spray of caustic solution and thence through a hot-water rinse. Inside the washing machine the nozzles are placed in such positions that the liquid thoroughly cleanses the metal. Parts then are transported through the oven, which is heated to a temperature of 400 deg. F. Passage through the washing machine and drying oven takes 20 min.

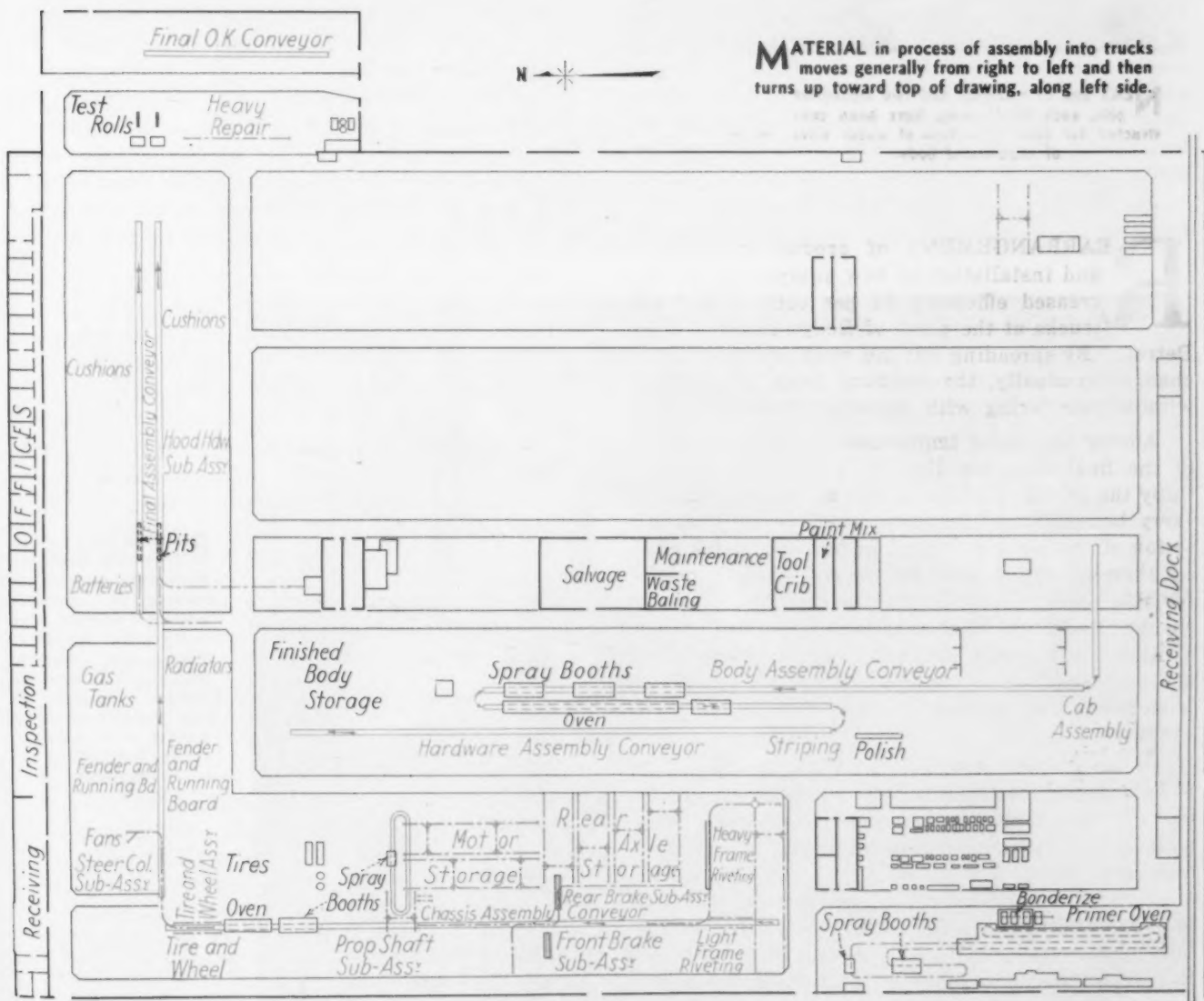
Parts are discharged from the oven on to a wire screen platform, where those not to be bonderized are picked up by a workman and hung on an overhead monorail conveyor to go through the enameling process. After moving through a spray booth, where they receive a coat of enamel, they pass into a drying oven. This is built overhead so as to permit utilization of floor space underneath it for other purposes. The entire enameling process, including four coats and the drying period, consumes one hour.

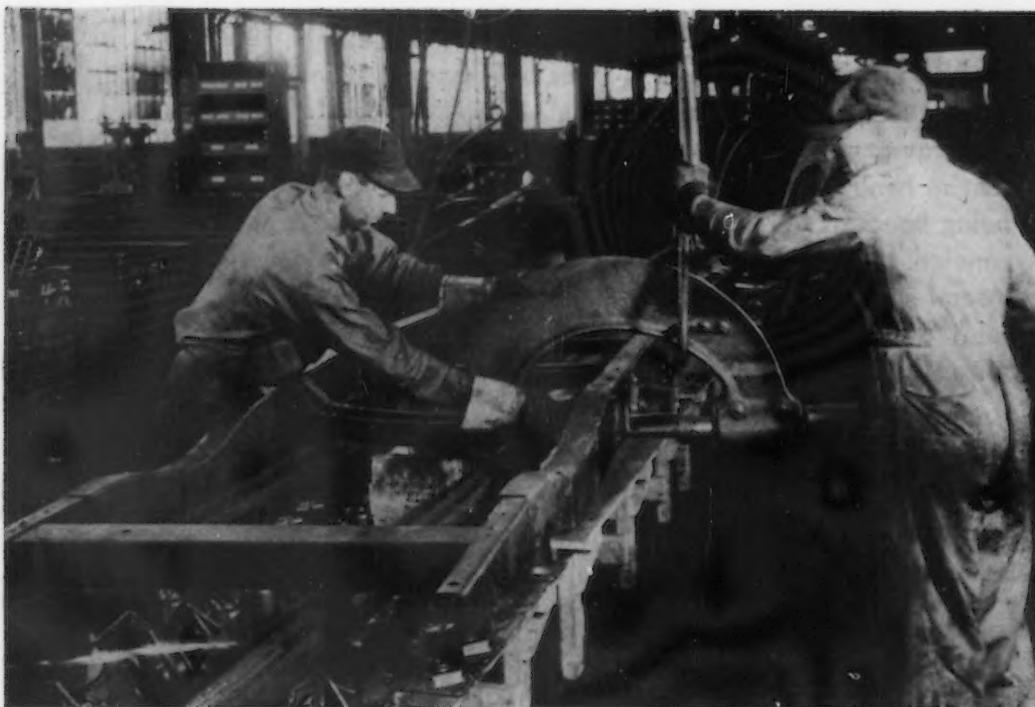
DODGE BROTHERS, INC., has increased efficiency in manufacturing its trucks 30 per cent by rearranging production facilities and installing new equipment. Relocation of the final assembly line has saved 60 per cent in handling parts. Sheet-metal parts are protected against rust by being bonderized. Truck chassis now are lacquered instead of being enameled, this simple change reducing the amount of space needed on the assembly line from 180 ft. to 12 ft. A new method of drying freshly-painted truck bodies and cabs has substantially reduced the time required for this work. Cold-yoke equipment is used for riveting the chassis frame.

Equipment for bonderizing of all parts which are to be exposed to the weather is a new feature of the plant. Bonderizing consists of covering the entire surface of each part with a non-metallic, paint-absorbent coating (known as Bonderite), chemical action making the coating a part of the metal. The new surface obtained by bonderizing is rough, thus assuring permanent adhesion between enamel and

metal. The enamel penetrates the rough, porous surface of the bonderized metal, insuring a lasting bond. With this permanent coating protecting the metal, parts cannot rust or deteriorate under the worst weather conditions.

Parts to be bonderized are placed on a rack, which is then submerged in a vat filled with Bonderite solution for 7 to 10 min., depending on the size of the





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COLD rivets $\frac{3}{8}$ in. in diameter, driven into place by portable cold-yoke riveting machines, are used to rivet together the chassis, insuring a tight fit and eliminating shrinkage.

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parts, and then are passed into an adjoining vat for a hot-water rinse. Two 12,000-gal. vats are used for this purpose. The racks are lifted into and out of the vats by overhead crane, parts having been delivered in small trucks from the washing machine and drying oven to the bonderizing department. After bonderizing, parts are stored nearby until they begin their journey through the enameling process already described.

Heretofore truck chassis were enameled, whereas now they are lacquered. This single change reduced

the amount of space needed on the assembly line for this work from 180 ft. to 12 ft. Lacquer is more expensive than enamel, but the added cost is more than absorbed by the saving in heat and space. The lacquer dries almost instantly after it is applied, so that a prolonged drying period is unnecessary.

A substantial saving of time has resulted from the new method of drying freshly-painted truck bodies and cabs. Formerly, as bodies were painted, they were shunted off to the side of the line to dry in the open air. This required from three to four



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PRIOR to being bonderized or enameled, sheet-metal parts are put through an automatic washing machine and drying oven. At end of this process, workman places part on overhead monorail conveyor to pass through enameling process, or on trucks to go to bonderizing department.

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hours for each body, during which time all work on the body had to be suspended. To eliminate this loss of time and to speed up general operations, an electrically-heated drying oven, 120 ft. long, has been installed directly over the conveyor line. Twelve minutes after the body enters the oven, it emerges completely dried and ready to be worked on.

Portable cold-yoke riveting machines have re-

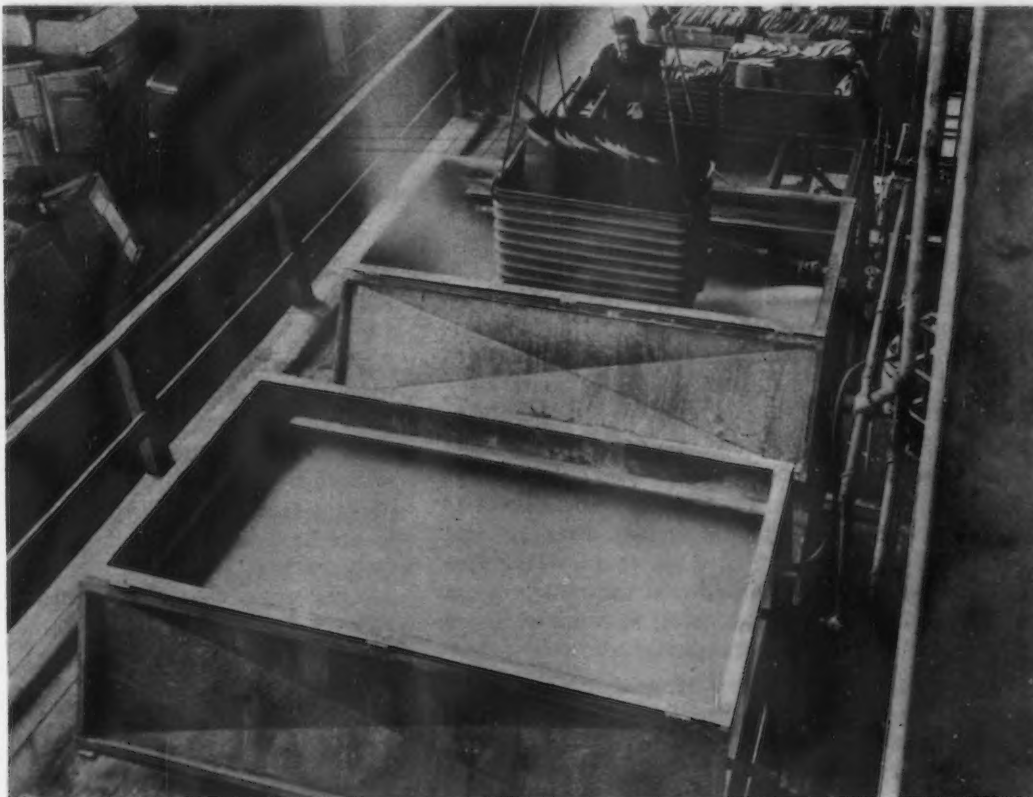
The saving in floor space effected by the new arrangement makes it possible to store, inside the building, completed trucks ready for delivery.

Special-equipment trucks, which represent an important part of Dodge truck manufacture, now are built in a separate structure away from the main plant. This department has been reequipped with special tools for machine work, mill work, painting

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SHEET-METAL parts are protected against rust by being submerged for 7 to 10 min. in a vat filled with Bonderite solution, followed by a hot water rinse (foreground). Bonderizing consists of covering the entire surface of each part with a non-metallic, paint-absorbent coating, chemical action making the coating a part of the metal.

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placed the old system of hot riveting for riveting together the chassis frame. By this method cold rivets $\frac{3}{8}$ in. in diameter are driven into place, insuring a tight fit and eliminating the shrinkage which inevitably follows a hot rivet's cooling.

Along the assembly line high-cycle electric tools have replaced pneumatic equipment, with a gain said to be at least 25 per cent in efficiency as a consequence. Near the end of the assembly line two inspection pits, each 30 ft. long, 4 ft. deep and 3 ft. wide, similar to drain pits of gasoline service stations, have been constructed for final inspection of the under sides of chassis and body. Rollers have been installed at the end of the line to test panel instruments and the motor of every truck before it leaves the plant for a road and track test.

An inside railroad freight dock 275 ft. long has been erected for the receipt of incoming materials. At right angles to the dock are five manufacturing bays, served by overhead cranes which pick up materials on the dock and deliver them to points along the assembly or sub-assembly lines. This arrangement protects parts from the ravages of the weather and does away with the necessity of having central storage facilities for the housing of parts until they are needed.

and other operations, making it economical to produce any of the 500 special units to be found among the 3500 different trucks comprising the Dodge line.

Costs Cut by Modern Methods

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ONE of the largest of our copper mining companies is able to produce copper at a cost of about 6c. a lb., according to a writer in *Mining and Metallurgy*. If this company used the methods and equipment available in 1915, but paid present wages and bore present costs of supplies and taxes, all of which are much higher than then, metal produced from the same grade of ore would, it is said, cost more than 12½c. a lb.

It is obvious that industry is bound to attract new capital at a too rapid rate, says the author, if selling prices and, therefore, profit margins do not truly reflect such fundamental changes as those cited above, in a lowered cost of production. The benefits of these changes inevitably inure to the public in lowered prices, and to industry in widening markets.

USING STEEL IN BUILDING THE PRIVATE RESIDENCE

By THOMAS J. FOSTER

Chairman, National Bridge Works, Long Island City, N. Y.



A GOOD many attempts have been made in the last few years to develop an improved house construction, but the actuating motive has been to introduce into the great housing industry the largest quantity of a specific material—such as steel, concrete, brick or gypsum—without considering its proper relation to the production of the economical house. This article will not consider the use of steel from this limited point of view. Steel has a legitimate relationship to the private dwelling, and this is an effort to determine what that relationship may be, always keeping in mind that the real problem is to provide a well-built, desirable, economical house by the correct use of the proper materials.

The importance of the use of steel in relation to the private residence is in proportion to its ability to make possible an improved construction at a reduced cost.

Residence construction in the United States totals more than three billion dollars a year, about one-half

of which is in single and two-family houses costing under \$20,000. The average residence costs about \$4,500.

The woman chooses the home and every woman's ideal home costs more than she can afford to pay. A good site is essential and so too high a percentage of the cost may be spent for the land; after which beauty of architecture and then convenience are the most important factors in selling a house. When these requirements have been satisfied economy necessarily asserts itself, so that permanence and safety of construction are not given the serious consideration they deserve. It is obvious that these requirements must be provided *without additional cost*.

Housing Cost Doubled and Automobiles Halved

Leonard P. Reaume, president of the National Association of Real Estate Boards, delivered an address in Chicago some months ago in which he pointed out that during the last 15 years, when the price of the

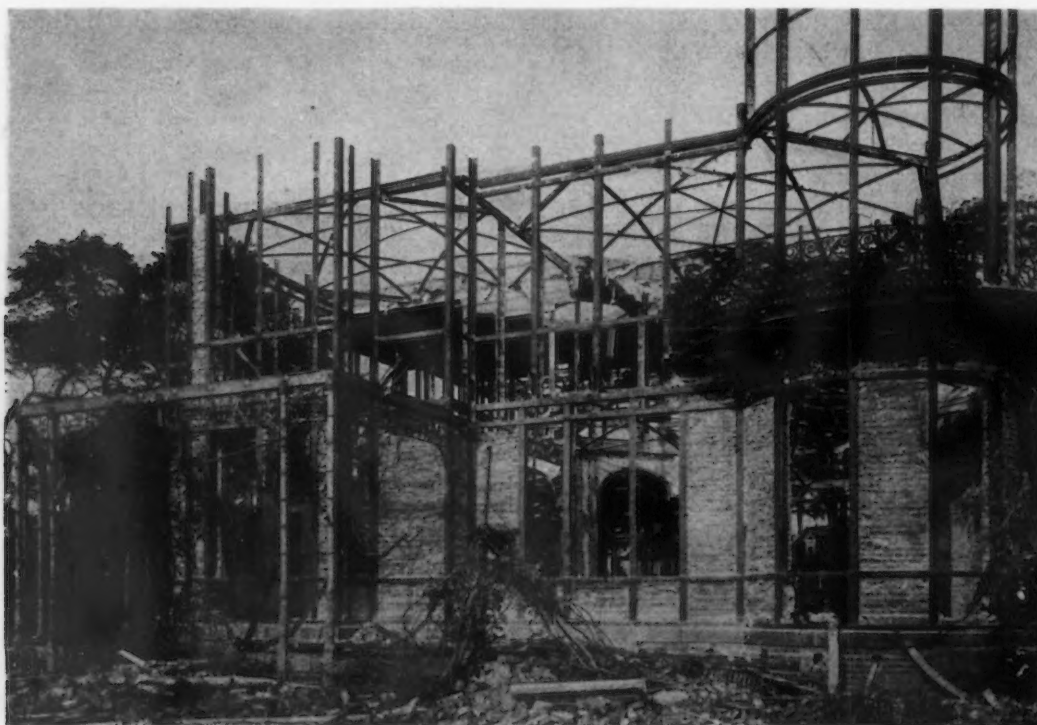


FIG. 1—Niels Poulson house under demolition, showing graphically the steel structure, how it was put together and how well it stood the test of time. This building, as told in *The Iron Age* of Jan. 29, 1931, was taken down not long ago and was found in an excellent state of preservation.

Ford automobile has been cut in two and its efficiency doubled, the single-family dwelling has doubled in price without a corresponding increase in comfort, durability or beauty.

In a book written 30 years ago, H. G. Wells expressed his opinion of the method of building a small house as follows:

I find it incredible that there will not be a sweeping revolution in the methods of building during the next century. The erection of a house wall, come to think of it, is an astonishingly tedious and complex business; the final result exceedingly unsatisfactory. It has been my lot recently to follow in detail the process of building a private dwelling-house, and the solemn succession of deliberate, respectable, perfectly satisfied men who have contributed each so many days of his life to this accumulation of weak compromises has enormously intensified my constitutional amazement at my fellow-creatures. The chief ingredient in this particular house wall is the common brick, burned earth, and but one step from the handfuls of clay of the ancestral mud hut, small in size and permeable to damp. Slowly, day by day, the walls grew tediously up, to a melody of tinkling trowels.

It is easy to erect a well-built house by this method, substituting non-combustible materials for those ordinarily used in wood-joist construction, but the result is too costly for the average home owner. The only possibility for economy, therefore, is in the method of construction, and most of this saving must be accomplished in the labor at the building site. The fact must be faced that an improved construction cannot be furnished at a moderate cost without a complete revolution in the method of assembly and erection. Architectural and engineering skill must be applied from the foundation to the roof. The present waste in home building, which the Department of Commerce sets at 53 per cent, can be eliminated by the skillful assemblage of the right materials.

Put the Question to All Existing Methods

HOW is this necessary improvement in construction methods to be accomplished?

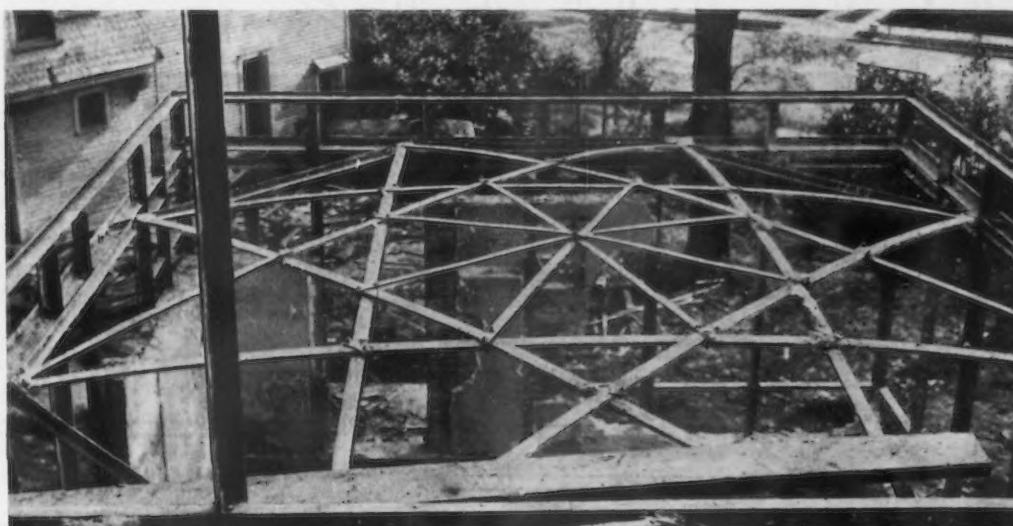
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IN the many attempts which have been made to extend the use of steel in the construction of private residences much effort has been expended in the mere substitution of a steel member for a corresponding wooden member. This idea is said by deep students of this subject to be erroneous. The structure should be designed as a complete and harmonious whole, using steel and other materials wherever they can be best adapted to the purpose at hand. This would not be a mere substitution of one material for another of similar characteristics, but would furnish a new type of structure differing from its predecessor in most construction details and like it only in that it incloses rooms for human occupancy. This article is the first of a series telling what has been done and outlining some of the developments which the future is likely to bring forth.

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The search for better ways of doing things is never ending. . . . Today's methods, however successful, can never be taken as wholly right. They represent simply the best efforts of the moment. Tomorrow must bring improvements in the methods

FIG. 2—Detail of ceiling or floor steel framing in the Niels Poulson house. Eight main members at four different angles were tied together at the center with four minor members at four other angles, as shown.



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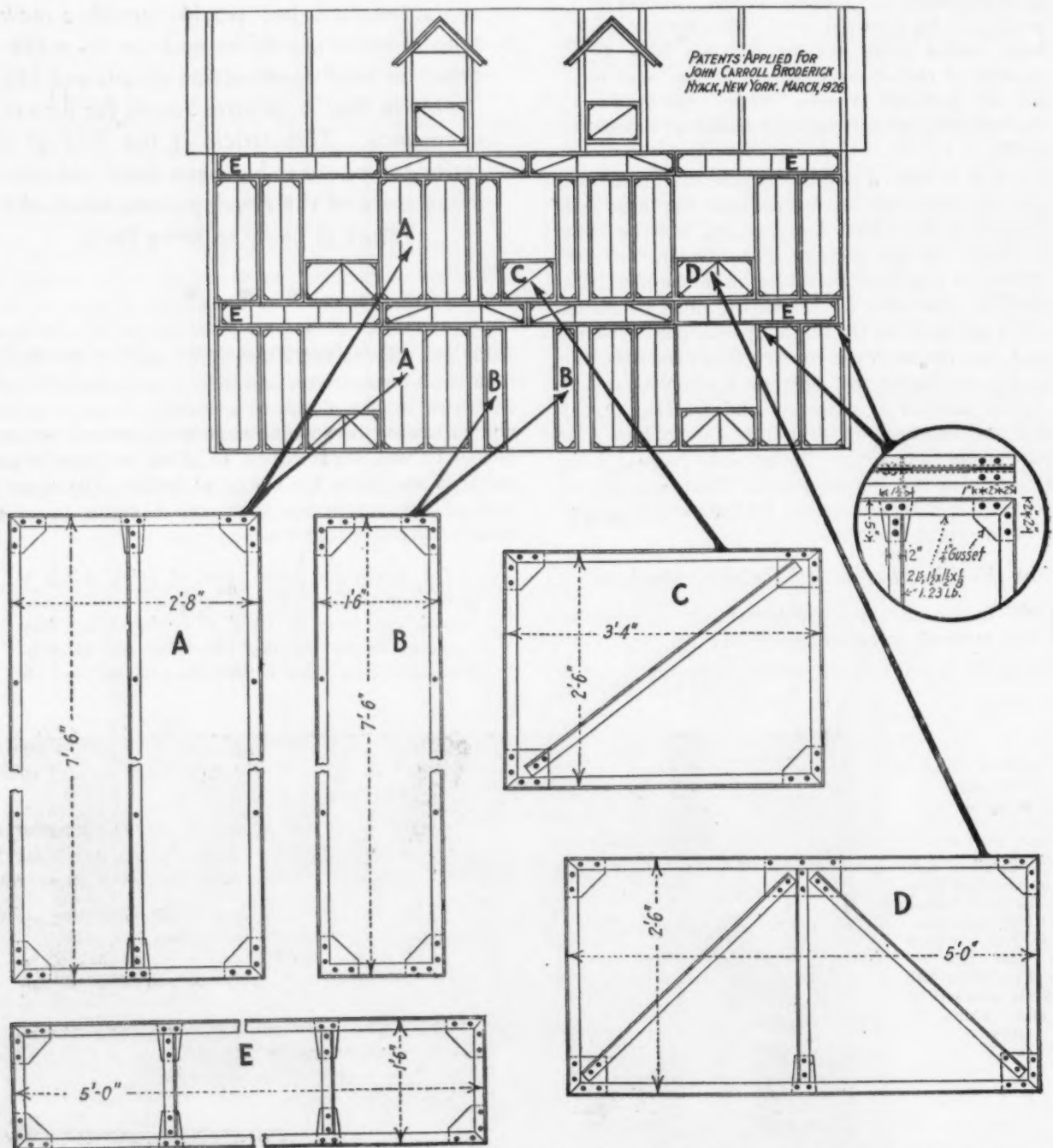


Fig. 4—System of standard unit steel construction developed by J. C. Broderick. This was described in *The Iron Age* of March 18, 1926.

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Must Utilize Economically the Best Materials Available

None of the constructions designed to further the use of specific materials has succeeded in producing a small house that could supersede the present frame construction. To accomplish this result an organization must be unprejudiced and concerned solely with the problem of an efficient and economical utilization of the best materials available, always keeping in mind the requirements of the home owner: Beauty, convenience, and a negligible cost for upkeep and obsolescence.

If it is true that there is 53 per cent waste in the building industry, the elimination of that waste would make available a better construction without additional cost—and waste is never a necessity. It is possible to give full value to the home owner, the builder and the mechanic. Everybody should profit by the production of good homes and the consequent stimulus to this three-billion-dollar industry. But more than financial considerations are involved; the welfare of the entire population is vitally affected. President Hoover says:

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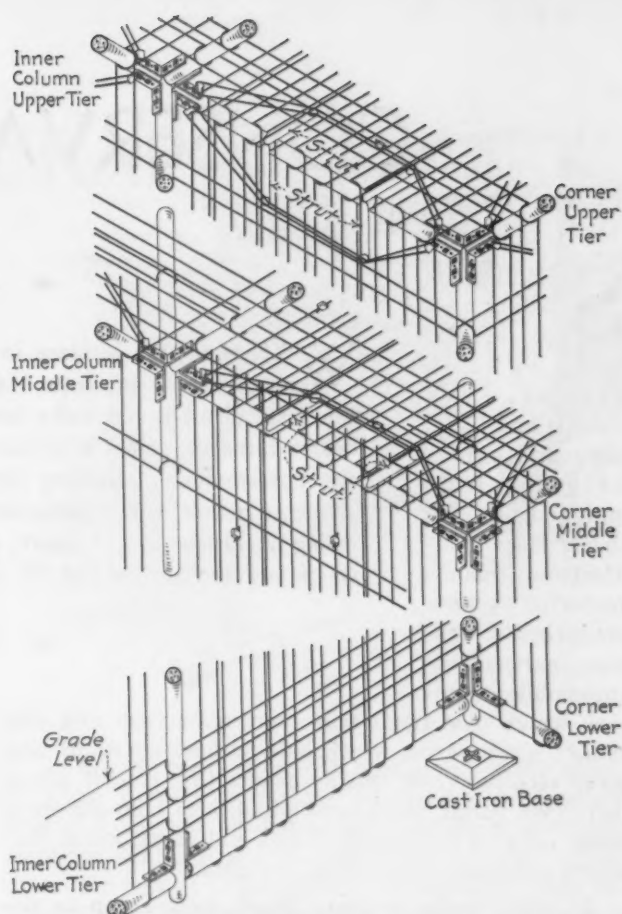


Fig. 3—Pipe design of Suspension Steel Concrete Co. in 1909, using connecting wires in conjunction with metal lath for ceilings, floors and walls.

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(Concluded on page 398)

CONSERVATION THROUGH

SHEET scrap baling can be divided into three groups, viz.: Sheet and tin plate mills which bale the trimmings from the sheets they manufacture; manufacturing plants producing stampings, particularly automobile facto-

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In addition to ordinary black sheet scrap as described above, there are considerable quantities produced in galvanized scrap, tin scrap, terne plate, enameled and painted sheets. These grades are not so desirable to the open-hearth mills as clean, black clippings, although most of the mills accept a small percentage of off-grade material with shipments of baled scrap. Some chemical plants remove the zinc or tin from galvanized sheets and from tin plates and obtain black sheet scrap as a by-product which, of course, is baled and shipped to the mills. Tin cans and other poor-grade materials are baled and utilized in sashweight foundries.

Certain grades of steel, as for instance high-silicon sheets such as used by electrical industries, have to be baled separately and are utilized as raw material only by mills that produce such steel. On the other side, nice new clippings with low-phosphorus analysis are very desirable for electric furnaces and command a premium. These, as a rule, should be made in smaller bales than those generally used by open-hearth furnaces.

Each of the three groups mentioned above, namely the sheet and tin plate mills, manufacturing plants and scrap yards, requires a different type of baling plant to meet particular conditions. Mills baling unannealed scrap must have much heavier equipment, and also more powerful. Stamping plants, particularly automobile factories, use less powerful equipment, but the baling plant has to be organized for high production. Scrap yards, which bale miscellaneous sheet scrap, new and old, must have a plant flexible enough to meet the constantly changing conditions.

In sheet or tin plate mills the baling plant is carefully planned to insure the most efficient method of

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WITH the great increase in the use of sheet steel for making miscellaneous products has come a problem in getting rid of the scrap. This is too bulky for convenient use in charging open-hearth furnaces, unless it is baled or otherwise compacted. Some of the considerations affecting this matter are brought out in this article, together with a statement of the differing character of the baling operations in (1) plants which make the sheets, (2) plants which use the sheets and (3) scrap yards handling old products.
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handling the loose scrap to the baler and finished bales into the railroad cars. As a rule, the press is located near a railroad track and the press automatically delivers the bale by means of a conveyor into the cars. Consequently the main problem is the

method of handling the loose scrap.

In most cases the loose scrap is handled directly from the shears into boxes located alongside. In more modern installations the scrap automatically drops from the shears into boxes placed under them. These boxes, which contain from 2 to 5 tons of scrap, are brought to the baler by electric crane, or in some instances by industrial tractor system. The scrap is deposited alongside the baling press and is fed into the press directly by raking it into the baling chamber; or in some cases it is fed by means of a pre-loading hopper, generally operated by compressed air, which is hinged to the baling press.

This hopper is being filled while the press is making a bale and, as soon as the bale is made, the next charge is quickly dumped into the baling chamber, thus cutting down appreciably the time required for loading the baler. It is not unusual for a scrap press in a sheet or tin plate mill to handle 6 tons or more an hour of unannealed side or end scrap from sheets.

It is important that the equipment be built with a high factor of safety and as fool-proof as possible. The operators as a rule are recruited from common labor and breakdowns are very expensive; because, if the baler is shut-down for repairs, it means that the mill must ship the scrap loose. This not only means a loss of revenue which would be derived from the baling operation, but it also disorganizes the production of the mill, because it requires additional crane capacity to handle the loose scrap into the cars, and usually mills have no crane capacity to spare.

In manufacturing plants the scrap is generally in the shape of trimmings from stampings, and also defective stampings. As this scrap is very bulky, particularly if a large amount of spoiled stampings such as fenders has to be handled, it is necessary to build a press with a much larger baling chamber than those used in sheet mills. But the machines do not have to be so powerful, because the steel is soft and requires less pressure for baling.

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BALING BULKY SCRAP

By HENRY JACOBSON

Chief Engineer, Calland-Henning Mfg. Co.,
Milwaukee

ner similar to that in vogue in steel mills—the scrap being deposited in boxes placed alongside the stamping presses and then handled by crane to the press. In some instances, where the factory layout permits, a conveyor is placed alongside of stamping presses, which carries the scrap directly to a pile next to the baling press, from which the press is fed. A pre-loading charging hopper as a rule is used to increase the production. Usually, the bales are discharged automatically on to the conveyor and thus carried into gondola cars.

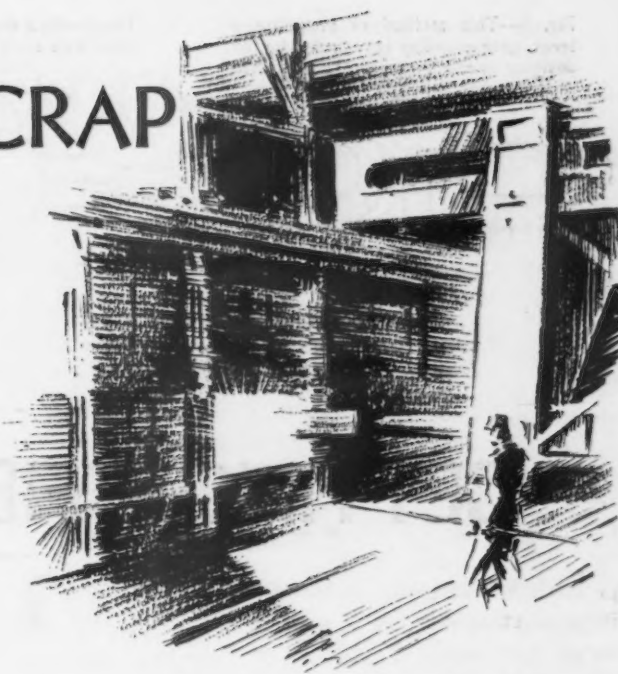
Baling press equipment in automobile plants must be designed also in such a manner so as to avoid breakdowns. If the baling press is shut down, the scrap presents such a problem that it may disorganize the entire production, on account of its bulky nature.

The third group of baling plants presents a different problem from the first two groups because, as stated before, these plants have to be flexible to meet constantly changing conditions. The scrap they bale varies from day to day and it is not so uniform as in manufacturing plants. The scrap is received either by carloads from large shippers, or by truck from local sources.

Sometimes the scrap is handled directly at the baling plant and is worked up immediately. At other times it is placed on storage piles for future use. Likewise, finished bales are either handled directly from press into gondola cars for immediate shipment to the mills, or piled up for storage. This, of course, makes it difficult to lay out a plant that would compare in efficiency with those in scrap producing establishments. Yet the modern scrap yard baling equipment must combine flexibility with low operating cost, and some installations are very successful in that respect.

A modern baling press installation in a scrap yard has a large baling chamber, as most of the scrap here baled is bulky. Yet a press must be capable of producing standard-sized bales which should not exceed 20 in. in any dimension, so that they may easily be loaded into open-hearth charging boxes.

Investment in such a plant is quite large and, therefore, the plant must have sufficient capacity to bring satisfactory returns. At best, the cost of baling is easily twice as high as in manufacturing plants which bale their own scrap. And the bales, if made of old scrap, will sell at approximately \$2 a ton less than those made of new scrap.



In former years (and even now) most of the baling in scrap yards was confined to new sheet clippings. However, as the producers of such scrap gradually equipped themselves with baling presses, this source of supply tended to disappear and the loose scrap became harder to obtain and consequently more expensive. As a result, the margin between loose and baled scrap is becoming less attractive to the scrap yard operator and really only those equipped with the most modern baling plant can afford to handle this commodity.

Consequently the scrap yards have commenced to pay more attention to baling old scrap. This particularly means discarded automobiles and similar sheet-metal products which heretofore were being taken to city dumps, creating a nuisance to any community because of their unsightly appearance and also because of the expense to the city in handling this refuse.

Considering the great value of this scrap from the standpoint of conserving our natural resources, in this case principally the iron ore, we can readily see that the time is not far distant when such dumps will go out of existence altogether, and all discarded sheet-steel products will be returned to industry for remelting after proper preparing through baling.

In 1929 the total ingot production in the United States amounted to 56,000,000 tons. The total tonnage handled by scrap yards was approximately 30,000,000 tons. This plainly indicates how scrap replaces iron ore, limestone and coal. It is, therefore, obvious that all scrap that now goes to the dumps should be salvaged to conserve our ore deposits.

Many steel mills are readily buying such scrap, classified as No. 2 bales, at of course a lower figure than bales made of new, clean clippings, because of the lower yield that can be obtained from such old scrap in open-hearth furnaces. Unfortunately, many mills refuse to utilize this kind of scrap which, therefore, is a drag on the market in certain districts.

USING STEEL IN BUILDING THE PRIVATE RESIDENCE

By THOMAS J. FOSTER

Chairman, National Bridge Works, Long Island City, N. Y.

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A GOOD many attempts have been made in the last few years to develop an improved house construction, but the actuating motive has been to introduce into the great housing industry the largest quantity of a specific material—such as steel, concrete, brick or gypsum—without considering its proper relation to the production of the economical house. This article will not consider the use of steel from this limited point of view. Steel has a legitimate relationship to the private dwelling, and this is an effort to determine what that relationship may be, always keeping in mind that the real problem is to provide a well-built, desirable, economical house by the correct use of the proper materials.

The importance of the use of steel in relation to the private residence is in proportion to its ability to make possible an improved construction at a reduced cost.

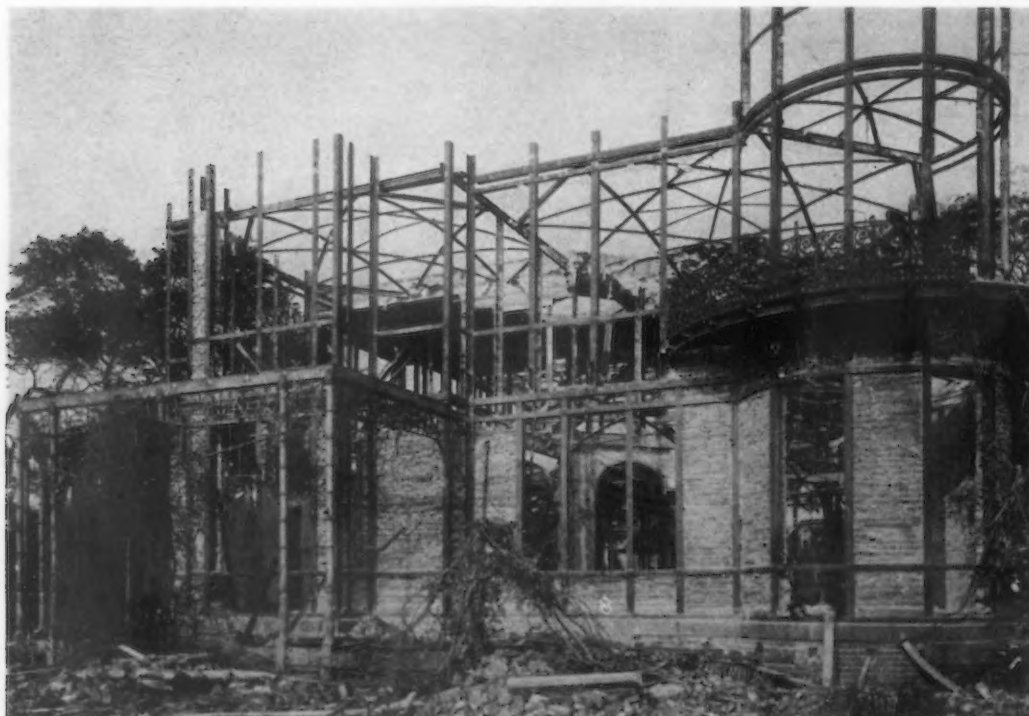
Residence construction in the United States totals more than three billion dollars a year, about one-half

of which is in single and two-family houses costing under \$20,000. The average residence costs about \$4,500.

The woman chooses the home and every woman's ideal home costs more than she can afford to pay. A good site is essential and so too high a percentage of the cost may be spent for the land; after which beauty of architecture and then convenience are the most important factors in selling a house. When these requirements have been satisfied economy necessarily asserts itself, so that permanence and safety of construction are not given the serious consideration they deserve. It is obvious that these requirements must be provided *without additional cost.*

Housing Cost Doubled and Automobiles Halved

Leonard P. Reaume, president of the National Association of Real Estate Boards, delivered an address in Chicago some months ago in which he pointed out that during the last 15 years, when the price of the



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FIG. 1—Niels Poulson house under demolition, showing graphically the steel structure, how it was put together and how well it stood the test of time. This building, as told in *The Iron Age* of Jan. 29, 1931, was taken down not long ago and was found in an excellent state of preservation.

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In a book written 30 years ago, H. G. Wells expressed his opinion of the method of building a small house as follows:

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It is easy to erect a well-built house by this method, substituting non-combustible materials for those ordinarily used in wood-joint construction, but the result is too costly for the average home owner. The only possibility for economy, therefore, is in the method of construction, and most of this saving must be accomplished in the labor at the building site. The fact must be faced that an improved construction cannot be furnished at a moderate cost without a complete revolution in the method of assembly and erection. Architectural and engineering skill must be applied from the foundation to the roof. The present waste in home building, which the Department of Commerce sets at 53 per cent, can be eliminated by the skillful assemblage of the right materials.

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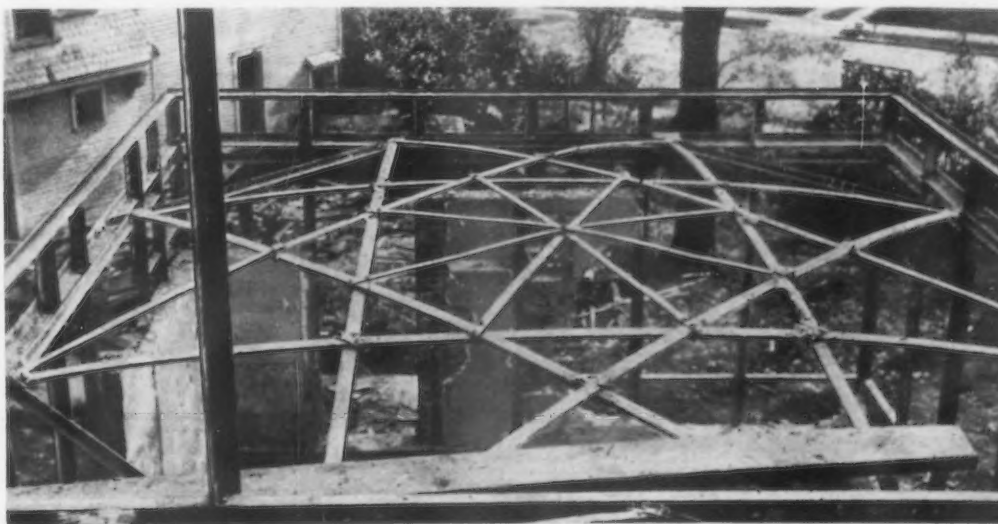
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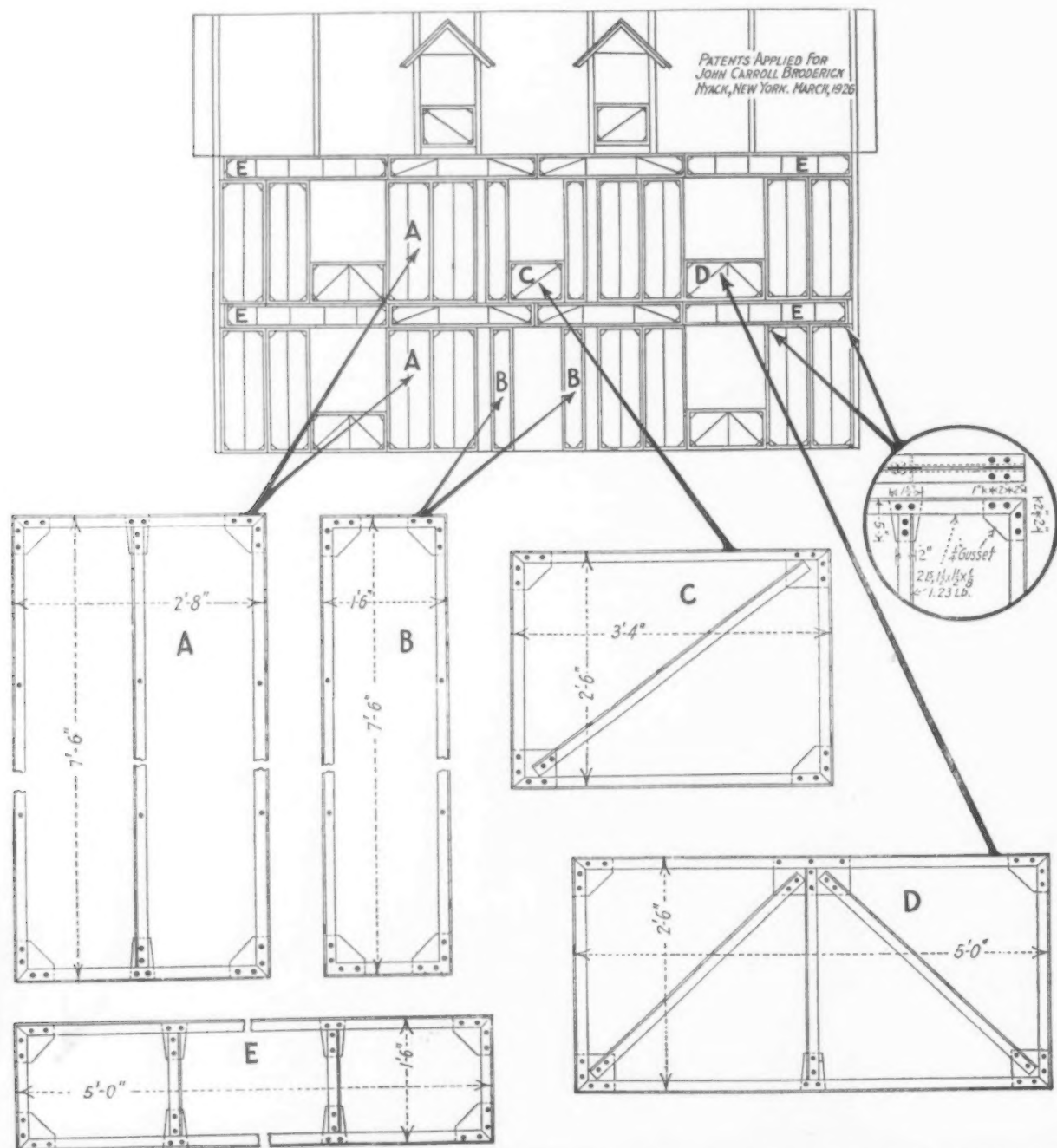


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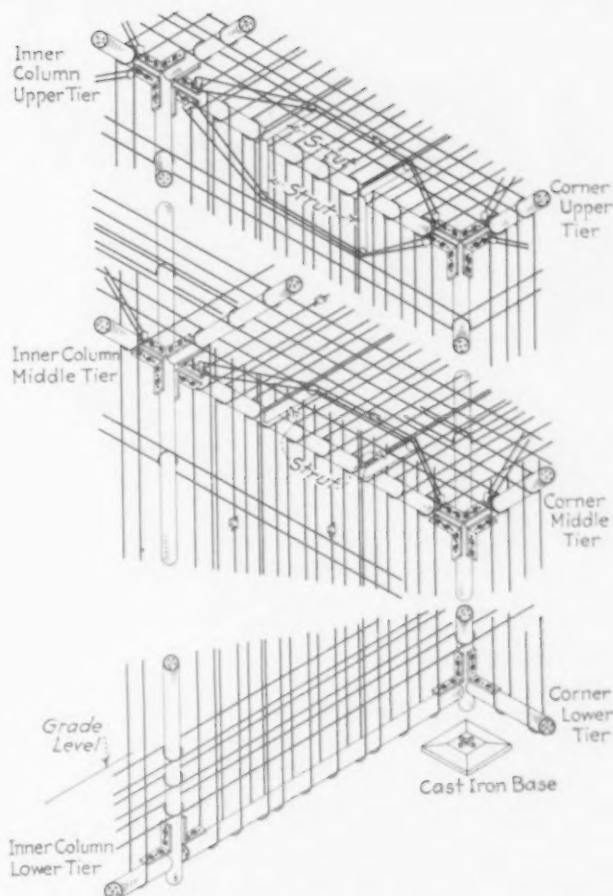


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handling the loose scrap to the baler and finished bales into the railroad cars. As a rule, the press is located near a railroad track and the press automatically delivers the bale by means of a conveyor into the cars. Consequently the main problem is the

method of handling the loose scrap.

In most cases the loose scrap is handled directly from the shears into boxes located alongside. In more modern installations the scrap automatically drops from the shears into boxes placed under them. These boxes, which contain from 2 to 5 tons of scrap, are brought to the baler by electric crane, or in some instances by industrial tractor system. The scrap is deposited alongside the baling press and is fed into the press directly by raking it into the baling chamber; or in some cases it is fed by means of a pre-loading hopper, generally operated by compressed air, which is hinged to the baling press.

This hopper is being filled while the press is making a bale and, as soon as the bale is made, the next charge is quickly dumped into the baling chamber, thus cutting down appreciably the time required for loading the baler. It is not unusual for a scrap press in a sheet or tin plate mill to handle 6 tons or more an hour of unannealed side or end scrap from sheets.

It is important that the equipment be built with a high factor of safety and as fool-proof as possible. The operators as a rule are recruited from common labor and breakdowns are very expensive; because, if the baler is shut-down for repairs, it means that the mill must ship the scrap loose. This not only means a loss of revenue which would be derived from the baling operation, but it also disorganizes the production of the mill, because it requires additional crane capacity to handle the loose scrap into the cars, and usually mills have no crane capacity to spare.

In manufacturing plants the scrap is generally in the shape of trimmings from stampings, and also defective stampings. As this scrap is very bulky, particularly if a large amount of spoiled stampings such as fenders has to be handled, it is necessary to build a press with a much larger baling chamber than those used in sheet mills. But the machines do not have to be so powerful, because the steel is soft and requires less pressure for baling.

The loose scrap, in most cases, is handled in man-

BALING BULKY SCRAP

By HENRY JACOBSON

Chief Engineer, Calland-Henning Mfg. Co.,
Milwaukee

ner similar to that in vogue in steel mills—the scrap being deposited in boxes placed alongside the stamping presses and then handled by crane to the press. In some instances, where the factory layout permits, a conveyor is placed alongside of stamping presses, which carries the scrap directly to a pile next to the baling press, from which the press is fed. A pre-loading charging hopper as a rule is used to increase the production. Usually, the bales are discharged automatically on to the conveyor and thus carried into gondola cars.

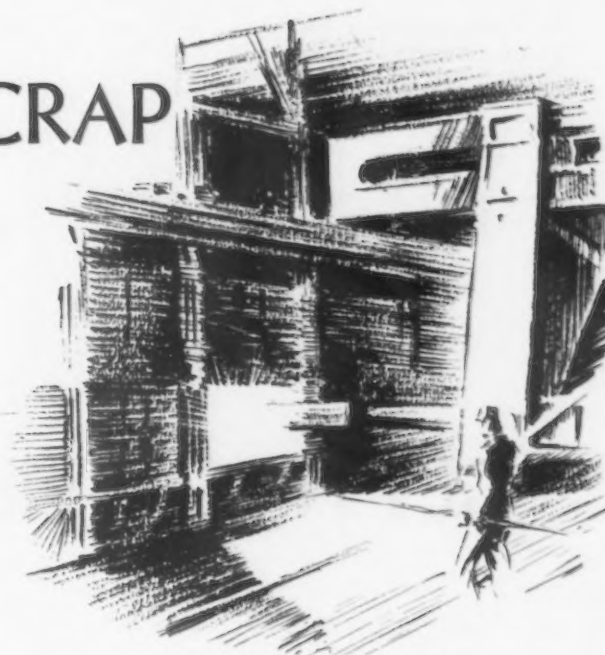
Baling press equipment in automobile plants must be designed also in such a manner so as to avoid breakdowns. If the baling press is shut down, the scrap presents such a problem that it may disorganize the entire production, on account of its bulky nature.

The third group of baling plants presents a different problem from the first two groups because, as stated before, these plants have to be flexible to meet constantly changing conditions. The scrap they bale varies from day to day and it is not so uniform as in manufacturing plants. The scrap is received either by carloads from large shippers, or by truck from local sources.

Sometimes the scrap is handled directly at the baling plant and is worked up immediately. At other times it is placed on storage piles for future use. Likewise, finished bales are either handled directly from press into gondola cars for immediate shipment to the mills, or piled up for storage. This, of course, makes it difficult to lay out a plant that would compare in efficiency with those in scrap producing establishments. Yet the modern scrap yard baling equipment must combine flexibility with low operating cost, and some installations are very successful in that respect.

A modern baling press installation in a scrap yard has a large baling chamber, as most of the scrap here baled is bulky. Yet a press must be capable of producing standard-sized bales which should not exceed 20 in. in any dimension, so that they may easily be loaded into open-hearth charging boxes.

Investment in such a plant is quite large and, therefore, the plant must have sufficient capacity to bring satisfactory returns. At best, the cost of baling is easily twice as high as in manufacturing plants which bale their own scrap. And the bales, if made of old scrap, will sell at approximately \$2 a ton less than those made of new scrap.



In former years (and even now) most of the baling in scrap yards was confined to new sheet clippings. However, as the producers of such scrap gradually equipped themselves with baling presses, this source of supply tended to disappear and the loose scrap became harder to obtain and consequently more expensive. As a result, the margin between loose and baled scrap is becoming less attractive to the scrap yard operator and really only those equipped with the most modern baling plant can afford to handle this commodity.

Consequently the scrap yards have commenced to pay more attention to baling old scrap. This particularly means discarded automobiles and similar sheet-metal products which heretofore were being taken to city dumps, creating a nuisance to any community because of their unsightly appearance and also because of the expense to the city in handling this refuse.

Considering the great value of this scrap from the standpoint of conserving our natural resources, in this case principally the iron ore, we can readily see that the time is not far distant when such dumps will go out of existence altogether, and all discarded sheet-steel products will be returned to industry for remelting after proper preparing through baling.

In 1929 the total ingot production in the United States amounted to 56,000,000 tons. The total tonnage handled by scrap yards was approximately 30,000,000 tons. This plainly indicates how scrap replaces iron ore, limestone and coal. It is, therefore, obvious that all scrap that now goes to the dumps should be salvaged to conserve our ore deposits.

Many steel mills are readily buying such scrap, classified as No. 2 bales, at of course a lower figure than bales made of new, clean clippings, because of the lower yield that can be obtained from such old scrap in open-hearth furnaces. Unfortunately, many mills refuse to utilize this kind of scrap which, therefore, is a drag on the market in certain districts.

Fig. 1—This method of mounting a lever, gear or pulley is regarded by the designer as much more economical than that shown in Fig. 2.

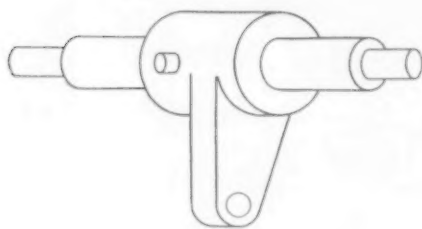


Fig. 2—As a die casting, this construction is no more expensive than that in Fig. 1.

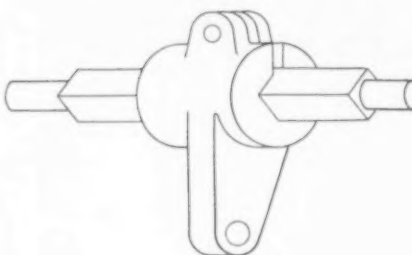
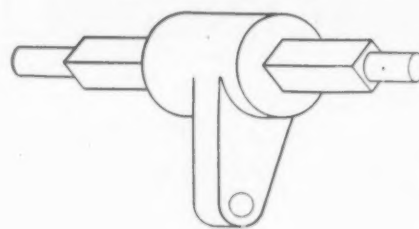


Fig. 3—This clamp hub method of fastening adds but little to the cost as compared with that in Figs. 1 and 2, when all are die cast.



GETTING THE MOST OUT OF



IT is only during the last decade that die castings have become widely applied in the mechanical industries. Although there have been many interesting applications, the uses to date have by no means exhausted the possibilities of this process in the mechanical field.

A simple illustration of the possibilities that die castings hold for the machine designer is the fastening of a gear, pulley or lever to a shaft. Fig. 1 shows a common method of mounting a lever which, from a designer's viewpoint represents a distinct economy as compared with that in Fig. 2. But when the lever is a die casting, it costs no more to cast a square hole than a round one, so that the advantages of the method shown in Fig. 2 are obtainable at no increase in cost. The many instances of this form of construction lead to the belief that designers are taking advantage increasingly of the odd-shaped hole construction.

Very often a clamp hub method of fastening, such as shown in Fig. 3, is highly desirable, but it is not used because it is considered comparatively expensive. As a die casting, however, this construction adds very little to the cost as compared with the methods illustrated in Figs. 1 and 2.

Gear and Lever Hub Driving Connection

Fig. 4 shows a proposed method of joining the hub of a gear (A) to the hub of a double lever (B). Ob-

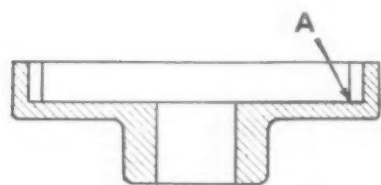


Fig. 7—The teeth of the die cast internal gear extend against the shoulder, and a smooth exterior is obtained.

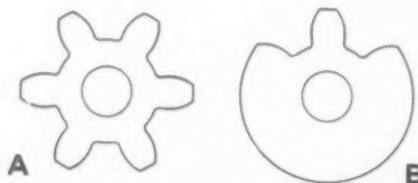


Fig. 8—Segment B, die cast, costs more to produce than gear A.

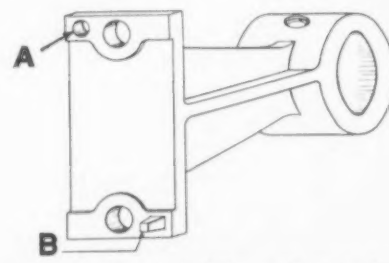


Fig. 9—Dowels of different shapes and sizes may be easily die cast to assure assembly in only one way.

serve that end drive pins were to be driven into hub of gear and mating holes were drilled into the lever to meet them and act as a driving connection. For a machined casting, the method as shown in Fig. 4 would be cheaper than that shown in Fig. 5. As a matter of fact, Fig. 5 is cheaper than Fig. 4 to produce as a die casting and may also have the additional key at X (Fig. 5) cast integral to assure assembly in only one way.

Frequently, machine construction calls for riveting a part to a die casting. In a number of cases, riveting studs can readily be cast directly into the piece at practically no extra cost and yet quite a saving can be effected. Besides this, a head might not harmonize with the design of a finished surface, and by die casting the rivet in one piece with the casting, the head does not show at all.

Internal gears are very often more desirable than ordinary spur gears, and the writer has often wondered why designers do not use such gears more often in their mechanisms. This is due no doubt to the prevailing impression inherent in machine cut gear construction; namely, that internal gears cost more to cut and mount than ordinary spur gears of the same size.

Die Cast Internal Gears

Whereas there is a wide differential under the usual machining methods, this is not true when these

Fig. 4—As a machined casting this method of joining the gear hub and the double-lever hub would be cheaper than that in Fig. 5.

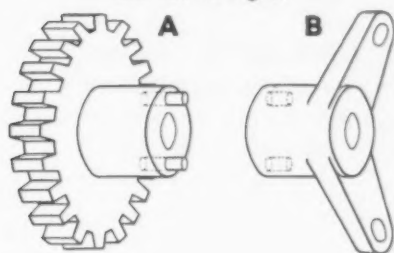


Fig. 5—As a die casting this construction actually costs less than that in Fig. 4 when machined.

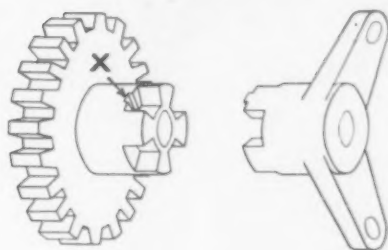
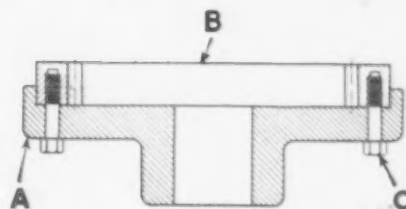


Fig. 6—Usual construction of internal gear with its hub mounting.



DIE CASTINGS

By L. H. MORIN

Chief Engineer, Doehler Die Casting Co.
New York

EXAMPLES suggestive of the possibilities of die cast machine elements are given in this article. Such die castings, it is pointed out, often permit a desirable construction that would not be considered with the more usual machined castings because of the expense involved.

gears are die cast. Fig. 6 shows the usual construction of an internal gear with its hub mounting. The hub A is fastened to the internal gear B by means of bolts or rivets C. The same problem as reviewed from the die casting standpoint, however, results in a simpler assembly, as indicated in Fig. 7. Of particular interest is the fact that the teeth are cast straight up against the shoulder as indicated at A; a smooth exterior, free from projections, is also obtained.

A peculiar paradox which will clearly illustrate the thought of getting the most out of die castings, can be seen by referring to Fig. 8. Apparently, gear A costs more to make than gear B, due to the fact that only two teeth need be cut in gear B, whereas six teeth must be cut in gear A. Both blanks are the same. From a die casting standpoint, gear B would cost more than gear A, because there is more metal in gear B, which is just the reverse from the gear cutter's standpoint.

We often have observed castings such as illustrated in Fig. 9, which require dowel holes as in-

dicated at A. The designer evidently intended to locate and drive a dowel pin through this hole. At B we have indicated this dowel cast integral. Note also that as cast it is of a different shape and size than the other dowel, thus assuring the assembling of this casting in only one way. This method saves money and eliminates extra pieces. The die casting against which this casting is fastened is also provided with mating holes to correspond. Dowels and dowel holes can be cast with considerable taper, if desired.

Time Saved in Assembly of Die Cast Gears

In designing a train of gears, it is often desirable to mark certain teeth to assure proper assembly. A die cast gear can readily have an arrow cast at the exact teeth which are desired to be meshed, and once the proper position is determined, all subsequent die castings will bear this mark at exactly the same place and will therefore assure correct assembly. Assembly time is thus saved at no extra die casting cost.

Fig. 10 is an excellent example of this condition.
(Concluded on page 398)

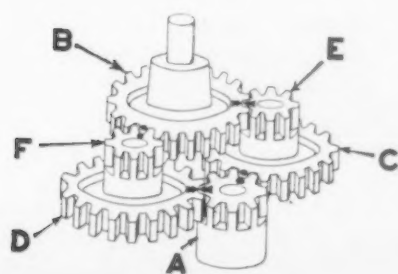
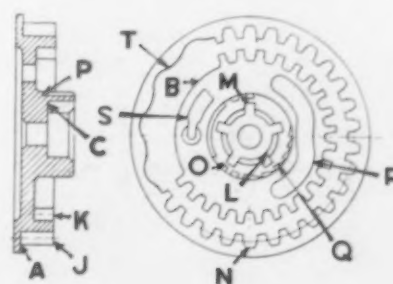
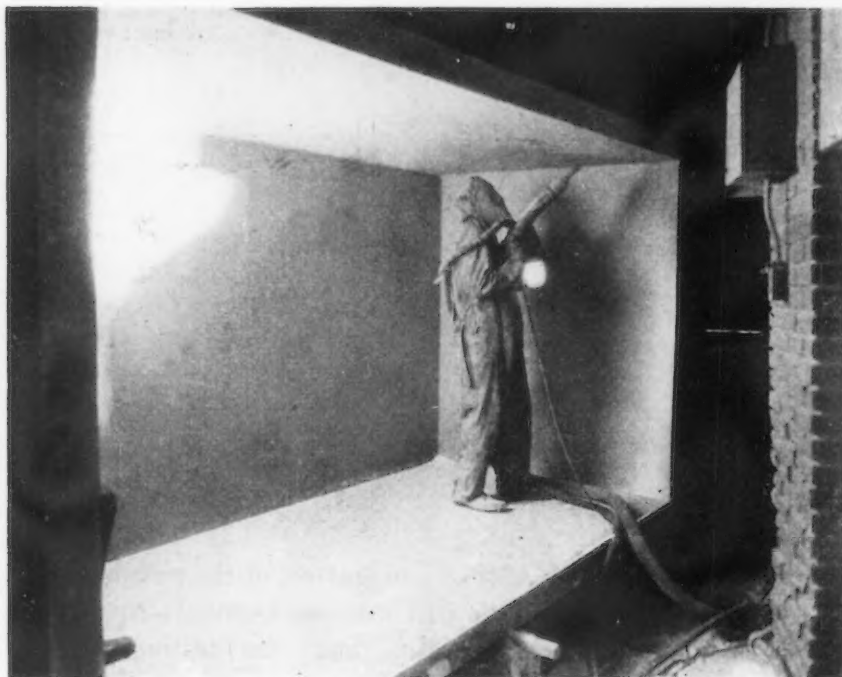


Fig. 10—Gear teeth may be cast with arrows or other marks to facilitate assembly.

* * *

Fig. 11—Intricate external and internal gear combination which, although never made, indicates the wide possibilities of die castings in machine design.





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SANDBLASTING the interior of a steel tank to provide the proper surface for application of rubber lining.

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MAKES PICKLING TANKS OF RUBBER

VULCANIZED rubber in combination with steel and masonry is being offered by the B. F. Goodrich Rubber Co., Akron, Ohio, for pickling tanks. While vulcanized rubber lining in steel tanks is a satisfactory acid resistant coating, except at prolonged high temperatures, such a lining might suffer from damage from abrasion of heavy or sharp objects being handled in and out of the bath.

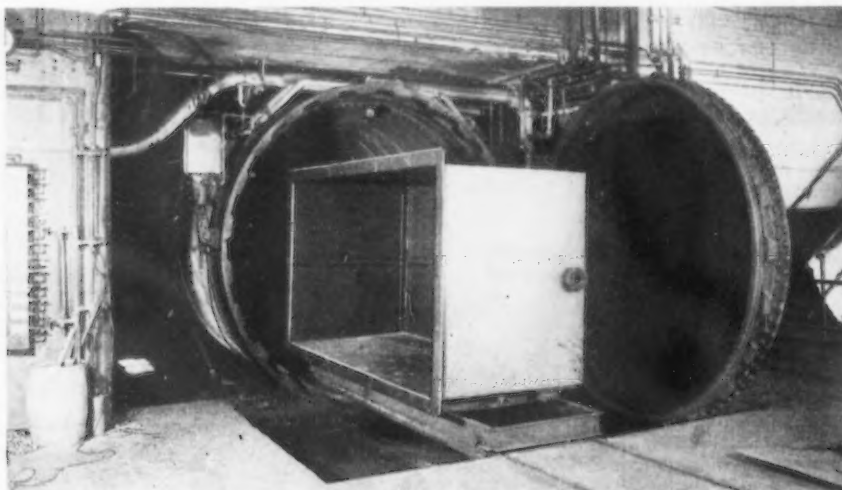
The rubber coating is applied to the interior of a steel tank by hand with a small roller. The Goodrich company uses its own "vulcalock" process, by

which soft, elastic sheet rubber is directly attached to the surface of metals with an adhesion, it is stated, exceeding 500 lb. per sq. in. Prior to application of the sheet rubber, the steel tank interior is sand blasted to remove all traces of grease and provide the necessary surface for the rubber covering. It is then coated with a special binder, said to give an interlocking of the rubber with the pores of the base.

In building a tank, the difference in contraction and expansion of the steel and rubber is overcome by ap-

plication of hard and soft rubber in layers, termed by the Goodrich company "triflex" construction. A layer of vulcanized rubber lies over the soft rubber, but instead of being a single unit with the vulcanized surface, an overlapping joint is formed in the surface to permit expansion of the hard rubber. This expansion joint consists of overlapping hard rubber separated with a soft rubber layer. A second layer of soft rubber is added before vulcanizing the coating.

When the temperature in the tank is not to exceed 150 deg. F., the lining



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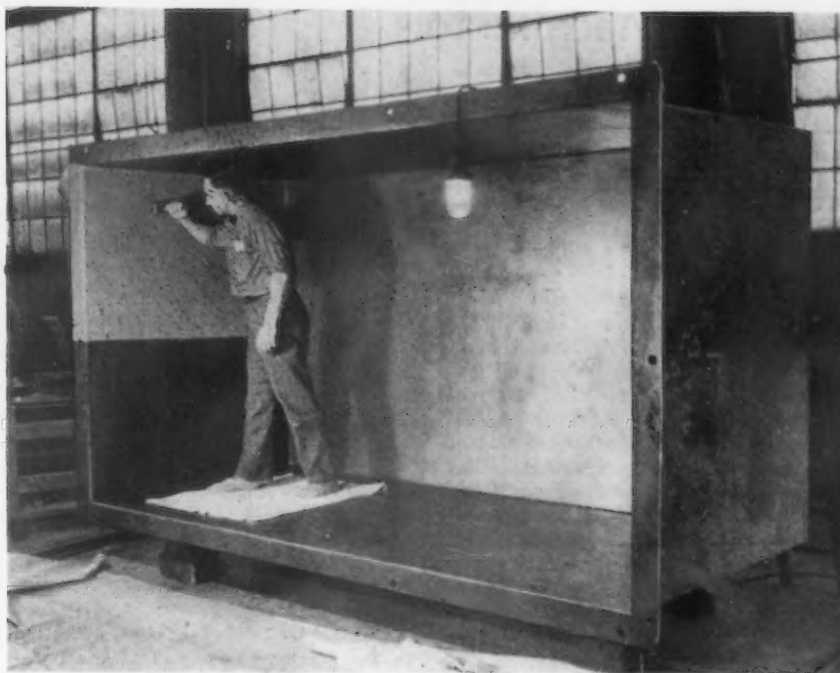
A STEEL tank lined with soft and elastic rubber sheeting entering the vulcanizer at the B. F. Goodrich Rubber Co. plant.

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ROLLING sheets of soft rubber on the cement coated steel so that it forms substantially integral union with the metal.

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AND BRICK LININGS

for protection of the rubber coating from damage may be of wood, with timber on the top flanges of the tank bolted together and other joints dove-tailed. This prevents exposure of the metal to acid. Where temperatures in the tank are to exceed 150 deg. F., the company recommends a 4-in. brick layer, laid on the bottom and sidewalls. This type is considered adequate for acids and temperatures up to 212 deg. F. Where temperatures in the tank are to be considerably in excess of 212 deg., the protective lining is of thicker bricks.

As such a design of tank is extremely heavy it requires care in providing adequate supports to prevent sagging. By placing such a tank on metal or acid resisting brick supports, there is

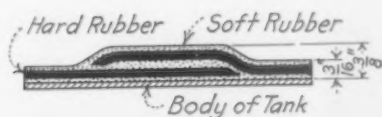
the additional advantage that elevation permits circulation of air under the tank to dissipate the heat. Such heavy tanks are never placed on a solid foundation for this reason.

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RUBBER lined steel tanks provide high acid resistance and will stand up under ordinary temperatures. To protect the coatings against damage from heavy or sharp objects placed in the bath, the B. F. Goodrich Rubber Co. is offering a rubber coated steel pickling tank with masonry lining and claims the construction will also allow for higher temperatures than safe with exposed rubber.

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The rubber lined tanks are usually constructed at the maker's plant, but on occasion rubber linings are applied to tanks already installed in the plant of the consumer.



CCROSS-SECTION (above) of the "triflex joint" used to overcome differences in contraction and expansion of steel and rubber. (Right) incomplete section of steel pickling tank with rubber and masonry lining. The bricks prevent damage to the rubber, which protects the steel from corrosion by acid.

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Swaging Machine for Work Up to 9-In. Finished Diameter

THE swaging machine illustrated, a redesigned No. 8 unit built by the Langelier Mfg. Co., Providence, R. I., and believed to be the largest unit of its kind both in actual size and capacity, is capable of tapering and reducing work up to a finished diameter of 9 in. in length up to 96 in. The maximum length of swaged work possible in one operation is 42 in.

Fourteen of the company's fixed-head rolls are set in the high-carbon steel head ring and deliver 2100 positive die blows per min. to the work. The die opening is controlled by stop rods engaging the full length of the hammer-blocks and the spindle slot is lined on the sides and rear with hardened steel plates. The machine is designed for either hot or cold work, the dies, as well as the hammer-blocks, hammer-block rolls and head rolls being made of alloy steel, hardened and ground to close limits.

Force-feed lubrication is supplied from a 40 gal. reservoir that is integral with the base casting at the rear. The pump supplies lubricant

through two lines, one leading to the hollow spindle and the other directly to the head rolls. A special soluble oil is recommended which serves to cool as well as to lubricate the dies and hammer-blocks.

The holder is a separate unit bolted to the machine base and to the foundation. Its gripping jaws are operated by means of an air cylinder automatically controlled by the saddle travel. They open at the outward end of the stroke and are closed at all other positions. A work stop unit, adjustable for any length of tube, takes the feed thrust.

An Oilgear hydraulic pump driven by a 5-hp. motor supplies 1000 lb. per sq. in. pressure for operating the saddle which has a 42-in. stroke.



Dogs on the front of the saddle may be adjusted to produce the proper cycle of rapid traverse, feed and reverse. A convenient hand lever provides for positive and instantaneous control throughout the cycle. The rapid traverse speed is 240 in. per min. and the feed may be adjusted to any speed up to this rate.

The machine is driven by a 50-hp. motor mounted on a sliding base on a separate foundation. Drive is through seven V-belts to a 5-ft. diameter sheave mounted on a tapered portion of the machine spindle between the bronze-bushed head and back bearings. The spindle runs at 150 r.p.m. Floor space required is approximately 6 x 16 ft.; the machine weighs 40,000 lb.

Finishing Coreplates in 2½ Minutes

PROCESSING coreplates uniformly on a high-speed basis, with low operating costs, has presented a difficult problem. Despatch Oven Co., Minneapolis, has developed and installed a coreplate flashing, baking and cooling continuous conveyor oven at the plant of Fairbanks, Morse & Co., Beloit, Wis., in which 2½ min.

after the coreplates are placed on the conveyor at the loading end, they are taken from the conveyor, properly finished.

As the coating machine is arranged, the parts fall on the oven conveyor. These parts are then taken into the oven and pass through four different sections. In the flashing section the temperature is 800 deg. F. and the volatiles of the varnish are burned out. In the oxidizing section large quantities of clean, fresh air come in contact with the coreplate varnish.

After this are the tempering section and then the cooling section.

An electric-motor-driven fan draws cool air over the coreplates, lowering their temperature so that they may be handled more easily. This cooling section is 15 ft. long, in the total length of the system of 48 ft.

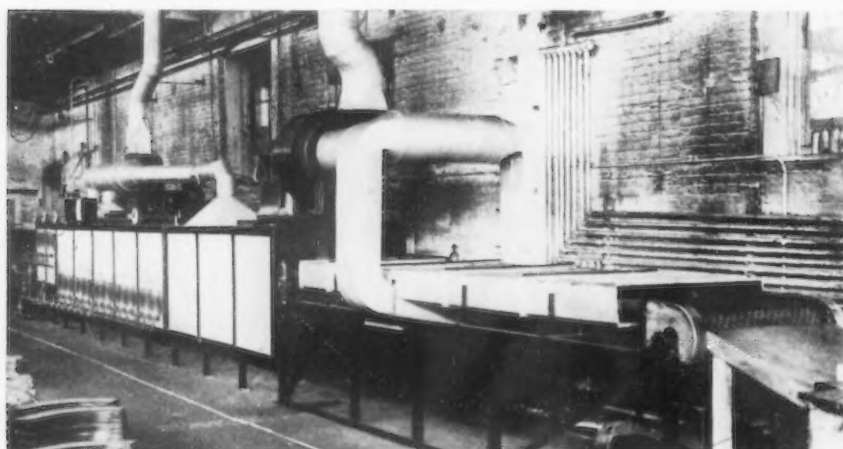
Capacity of this oven is from 500 to 1000 lb. of laminations an hour, depending upon the gage of metal used and the size.

The oven is constructed of structural steel members and 4-in. pan-ocel insulation. In the high-temperature zones there is additional Super-X insulation, to keep the heat losses at a minimum.

Gas burners properly graduated and located uniformly heat the oven. Temperature is automatically controlled by a vapor-tension thermostat operating in conjunction with an electric-motor-driven valve in the gas supply line. Average hourly consumption is 800 cu. ft. of 530 B.t.u. gas.

Forced ventilation is provided. Each section has its individual ductwork and regulating dampers, which are interconnected to a large electric-motor-driven fan with ample capacity to ventilate the entire oven.

The conveyor system is of the extra-heavy-duty type. Roller chain is arranged in two strands and heavy mesh belting is connected and kept taut by cross rods at proper intervals.



CONTINUOUS oven with four zones, for finishing coreplates. They pass through in 2½ min. on the mesh belting carried by roller chain on each side.

Develops Solid Grinding Wheel to Produce Unusual Finish

SOLID grinding wheels capable of giving finishes closely approaching those produced by lapping with compound or any of the so-called "loose" grain abrasives have been announced by the Carborundum Co., Niagara Falls, N. Y. In addition to the unusual finish, the new solid wheel assures close accuracy in the grinding.

Both Aloxit brand aluminum oxide and Carborundum brand silicon carbide form the abrasive agents. Extreme precautions are taken to prepare these materials in the form of an impalpable powder, uniform in grit size and so fine that they literally flow and might properly be classed as colloidal. Despite their small size, the grains possess, it is emphasized, the characteristics necessary to assure clean and fast cutting.

The accompanying illustration is from an unretouched photograph showing various types of finish on steel pins. To facilitate a comparison of these finishes two strips of ordinary blueprint paper were placed in front of the pins and reflected in the surfaces. The pins at each end as well as at the center of the row were finish-ground with the new type of finishing wheel. The sixth pin from the left has what is termed an "ultra" finish, the finest obtainable by grinding before the development of the new wheels. The second, third and fifth pins from the left carry what are

termed finishes Nos. 1, 2 and 3 respectively.

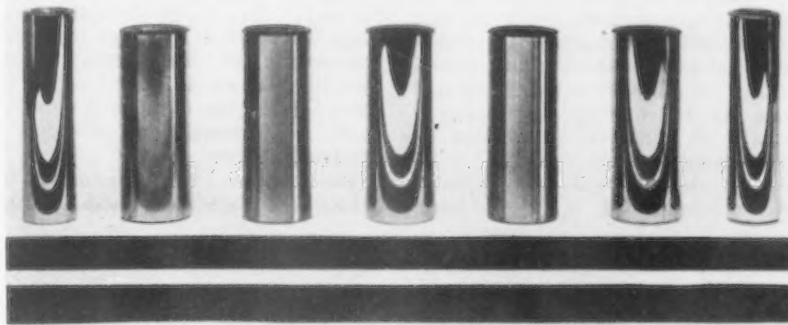
Attention is called to the almost perfect reflections appearing on the three pins ground on the new wheels. Of the other pins, the third and fifth show no reflection while the second pin from the left shows just a faint reflection of the dark lines.

The new wheels are not intended to do production grinding in the sense of the removal of large amounts of material. To obtain the highest finishes it is, of course, necessary to use a series of progressively finer wheels and a consequent diminishing stock removal. The amount of material to be removed by the finest wheels is dependent upon the scratches or wheel

marks left by the previous wheels used; the finer the surface produced by the preliminary wheels, the quicker the ultimate finish is obtained and the less the wear on the final wheel.

As the accuracy obtainable in any grinding operation may be limited by the accuracy of the grinding machine, it is, of course, important that the new wheels are used on machines, the spindles, bearings and general mechanism of which are so perfected that vibration is virtually eliminated. In general, machines of modern design meet this requirement, so that in most cases satisfactory results may be obtained by using the new wheels on existing equipment.

Applications of the new wheels include the finishing of piston pins and bearings, raceways and various types of rolls used both in the metal-working and textile industries. They have also proved to give finishes beyond any yet produced on rotogravure rolls.

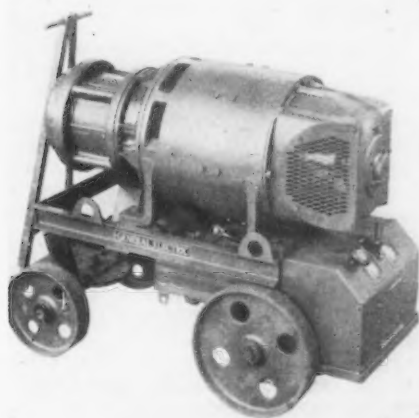


Specimen finishes obtained with wheels of various grades on a Cincinnati centerless grinder. The new wheels were used in grinding the center and end pins.

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Improved Stationary and Portable Arc Welders

NEW one-operator welding sets recently brought out by the General Electric Co., Schenectady, N. Y., provide many improvements, including (1) virtually instantaneous voltage recovery from short circuit to



nearly full open circuit voltage, thus giving a quickly responsive arc; (2) duplex voltage control by the operator over a wide range with special provision for a surplus voltage which can be used when it is necessary to employ very long welding leads; and (3) simplicity of operation and control.

These units, designated as the type WD-20 line, are obtainable in 100, 200, 300, 400 and 600-amp. ratings. Stationary sets are made as well as the portable type illustrated, which is of the same basic design. Models are made for operation on either alternating or direct current at all standard voltages and, in the case of alternating current, standard frequencies and 2 and 3 phase. Gasoline-engine sets may also be obtained.

Compactness, light weight and improved welding characteristics are emphasized. The a.c. types up to 600 amp. are of two-bearing construction. The sets are self-excited with a tapped series field for major current adjustments and a shunt field rheostat giving duplex voltage control.

Motors are of the most recent standard design and the generators embody new features. The a.c. set comprises a generator with overhung driving motor mounted on a simple base, to which is attached a strong sheet-metal control cabinet inclosing the generator control devices, meters and motor-starting equipment. A transformer-reactor of special design is mounted in the base under the generator. Base supports are arranged to be bolted to the floor or to have axles and wheels attached. A typical 300-amp. a.c. set of this type is 36 in. high, 50 in. long and 23 in. wide; it weighs 1865 lb.

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Decreases of 1.3 per cent in employment and 1 per cent in payrolls in Illinois are reported by the Illinois Department of Labor for the period of June 15, compared with that of May 15. The recession was caused entirely by manufacturing industries, which reported losses of 3 per cent in employment and 4.6 per cent in payroll.

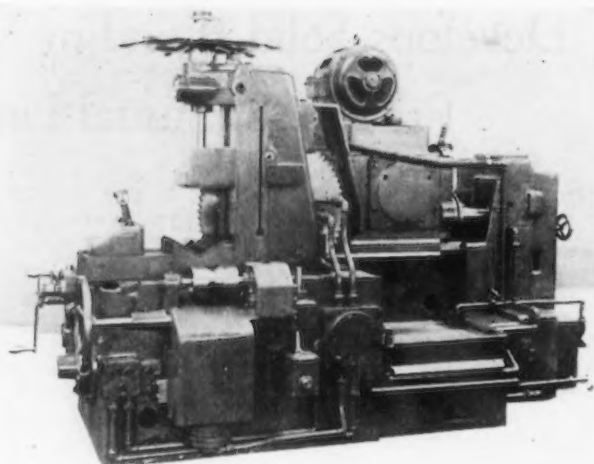
Hydraulic Metal-Sawing Machine for Heavy Stock

THE Heller Machine Co., 25 Church Street, New York, is marketing a new high-duty, hydraulically-actuated cold metal sawing machine in a range of sizes having maximum capacities from 5 to 18 in. round stock, and designed for the rapid cutting of bars, billets, forged stock and structural shapes.

Driven through a single pulley from a motor mounted on the saw carriage, the machine is a compact self-contained unit. Features include grouping of controls within easy reach of the operator; extra heavy box section bed; carriage mounted on wide, flat ways, gibbed for longitudinal adjustment; heat-treated chrome-nickel steel gearing throughout; multi-splined shafts for the sliding gears; and a separate oil pump for lubrication of the saw-head gearing.

Four changes of speed are obtainable by means of a single lever

SIDE view showing V-type roller for moving stock between cuts.



through sliding gears. Carriage feeds, ranging from 0 to 20 in. per min., are provided by hydraulic mechanism designed to assure flexibility and a smooth, even action of the saw blade. Adjustable feed knock-offs disengage the feed automatically at the end of the cut, and return the carriage to starting position by rapid traverse. The blade cuts upward through the work, thus placing the strain of cutting downward upon the ways, an arrangement intended to eliminate chatter.

The vertical work clamp is hydraulically operated and further

equipped with a "hammer" type clamping wheel with a free quarter turn to facilitate clamping of the stock by hand when making single cuts on stock of various sizes where hydraulic clamping could not be used to advantage. The front or horizontal clamping vise can be arranged either for mechanical or hydraulic operation.

For automatic positioning of the stock between cuts, there is a V-type roller that revolves continuously and is mounted on a hydraulically-operated vertical slide. This lifts the stock from the clamping block and moves it forward by power against the stock stop, where it is again clamped ready for cutting. Stock also may be carried forward and positioned by means of a handwheel that is independent of the lifting mechanism and the power feed drive. The outer end of the stock can be supported upon an adjustable stock carrier running on rails at right angles to the bed.

A chip remover, consisting of a soft cast-iron roller mounted on an adjustable slide holder, barely clears the tooth crests and serves to free the saw teeth of chips adhering to them. Coolant, supplied by a geared pump from a screened tank in the base, passes through two pipes to each side of the saw blade.

After setting the machine for proper blade speed, feed and cutting length of stock, movement of one lever releases the stock, raises the stock lifter and moves the work forward for the next cut when it is again gripped. Another lever throws in the feed and, at the end of the cut, the carriage automatically returns to the starting position by rapid traverse. Machines are obtainable with hydraulic feed for the carriage only, the other units being mechanically operated, or with any combination of hydraulic and mechanical operation.

Dean Machinery Co., Chicago, has concluded arrangements whereby it will handle in Illinois, Iowa and in parts of Indiana and Michigan the line of lathes manufactured by the John S. Barnes Corp.

Burnishing Barrel Handles Work Rapidly

INCREASED efficiency, particularly in large production and where the burnishing period is comparatively short, is claimed for the burnishing barrel illustrated, a new product of N. Ransohoff, Inc., Cincinnati.

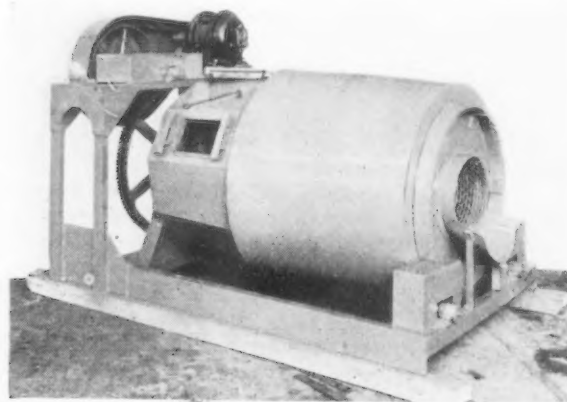
Like the standard burnishing barrel, the new equipment loads through a door in the periphery. The burnishing operation is the same as in the standard type barrel in which the diameter is greater than the length. When the burnishing is completed, the barrel is rotated in the opposite direc-

tion by means of a reversing switch on the motor. This automatically discharges the work through the screen in the center of the barrel, the work coming out at the end, the balls passing through the perforations in the screen and being retained in the cone surrounding the screen.

As soon as the work is discharged, the barrel is ready for another load. When the work is loaded and the door in the periphery bolted shut, running the barrel again in the burnishing direction causes the balls to return automatically to the burnishing compartment. Rehandling the balls is eliminated; this results in time saved and enables a larger proportion of balls to work to be used economically. The

fact that the barrel discharges at the end enables it to be built close to the ground; this permits a larger diameter of the tumbling compartment without excessive loading height.

At a safety razor plant, one of these new barrels is said to handle eight loads in 9 hr.; the burnishing period is 1 hr., and the time consumed in discharging and re-

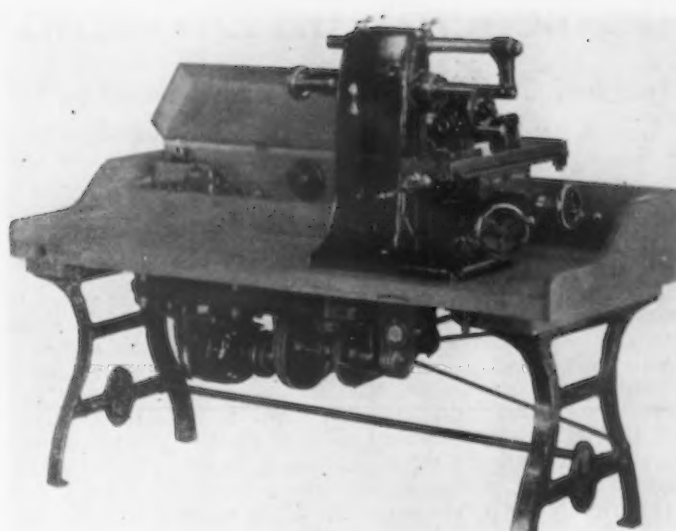


Motor-Driven Bench Miller

FOR general toolroom and experimental work, Hardinge Brothers, Inc., Chicago, has brought out a new bench type Cataract milling machine designated as the No. 5. The machine is motor driven through V-belts and the same type of under-bench transmission used on the company's bench lathe and No. 4 miller. A $\frac{3}{4}$ -hp., 1200 r.p.m. motor is employed.

Six speeds, forward or reverse, provide a cutting range from 160 to 1400 r.p.m. Mounted at the back of the bench is a box for holding the collets and various attachments that are furnished with the machine. A 6 x 20 in. working surface is provided by the table, which has three $\frac{7}{16}$ in. T-slots and a vertical and transverse motion range of $6\frac{1}{2}$ in. A 1-in. longitudinal movement of the table is also provided. Other specifications include collet capacity of cutter head, 1 in.;

DRIVE is through two V-belts from transmission and motor mounted under the bench.



diameter of arbor, $\frac{3}{8}$ or 1 in.; maximum capacity of swivel vise, $2\frac{1}{2}$ in. The milling machine alone weighs 340 lb.; the weight of bench and transmission, exclusive of the motor, is 487 lb.

square coping at the ends or V-notching at the center. For both operations, the material is fed to the dies without tilting, thus making it easy for the operator to cut to the required line.

Built-In Notcher and Coper for Buffalo Iron Worker

UNIVERSAL iron workers manufactured by the Buffalo Forge Co., Buffalo, are now being equipped with an interchangeable, built-in notcher and coper unit at the shear end. These units have capacities for notching or coping plate $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ in. thick on the No. 0, No. $\frac{1}{2}$ and No. 1 $\frac{1}{2}$ machines respectively. Flanges of 3 to 4, 3 to 6, and 3 to 7-in. beams and

corresponding sizes of channels, tees and angles can be notched or coped by the new device on the three sizes of machines respectively. The 90-deg. notching tools for the shear end are especially suitable for shops that use the punch end of the machine more extensively than the bar cutter and shear sections. Only 15 minutes is required to replace the notching tools on the shear end with square coping cutters. For shops having a considerable amount of both notching and coping to be done, however, it is recommended that the notcher be installed on the punch end, as formerly, and the new coper unit on the shear end be used also, thus avoiding the necessity for changing tools.

The mounting for the notcher and coper is especially designed to lend stiffness to the frame of the machine. Both supports for the dies are welded to the frame and do not depend upon studs to carry the load. By welding the supports it has been possible to reduce their size to avoid interference with the line of vision of operators using the slitting shears. The rocker arm is bronze bushed and turns on a heavy king pin that further stiffens the frame of the machine.

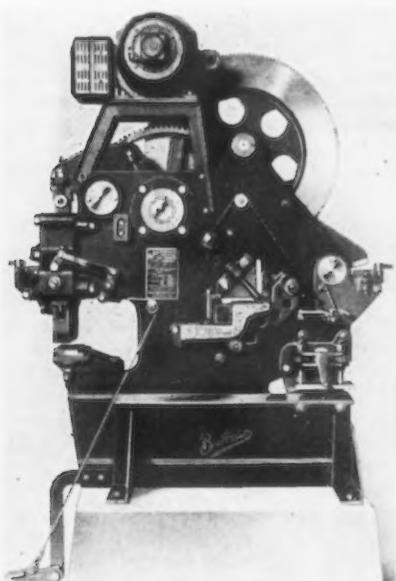
It is pointed out that, by inserting the material in a diagonal position, the 90-deg. notcher may be used to cope square the ends of beam or channel flanges as well as angles and tees. Suitable stops are provided for either

Low-Melting Point Brazing Alloy

A NEW brazing alloy containing a small percentage of silver and described as flowing freely at 1300 deg. F., is being marketed by Handy & Harman, 57 William Street, New York, under the trade name of "Sil Fos." It is for use where higher melting point base-metal brazing or welding alloys cannot be employed without danger of weakening, distorting or destroying the parts adjacent to the joint.

Deep and quick penetration, due to the silver in the alloy, is also claimed. In addition, it is pointed out that at 1400 deg. F., the flow point of borax flux with which it is generally applied, there is 100 deg. of superheat, which increases the fluidity still further and aids penetration and alloying action. Less than the usual amount of flux is said to be required because of the deoxidizing effect of the phosphorus in the alloy, and this tends to reduce the cost of cleaning and finishing after joints have been made. Under certain conditions, satisfactory copper to copper joints can be made without using any flux.

This new brazing material, for which patents have been applied, can be used in many cases for joining brass, bronze, nickel, nickel-silver, extruded brass and bronze, Monel metal, and other metals and alloys fusing above 1300 deg. F. While containing silver, the material is not classed as a silver solder by its makers, and is sold by the avoirdupois pound rather than by the troy ounce.



Interchangeable notches or coper unit is shown at the extreme right-hand end of the machine.

Bethlehem Cuts Dividend to 50c.

President Grace Refuses to Commit Himself on Fall Prospects—
Wage Rates Unchanged

"PRICES are tending toward stability in the steel industry, and it is reasonable to expect that second quarter reports will strengthen efforts to get better prices," said Eugene G. Grace, president, Bethlehem Steel Corp., in announcing the earnings of his own company. The quarterly net income of the corporation, after interest, depreciation, depletion, etc., was \$1,452,743, or the equivalent of \$1.45 a share of preferred stock, compared with \$1,941,942, or 6c. a common share (after preferred dividends) in the first quarter of 1931 and \$1.86 a common share in the second quarter of 1930. The deficit after paying dividends at the regular rate of \$1.75 a share on the preferred stock was \$297,257. The dividend rate on the common stock was reduced from \$1 to 50c. a share, the outlay at the reduced rate amounting to \$1,600,000, making a total draft on surplus of \$1,897,257.

Decline in Billing Prices Is Small

Billing prices in the second quarter averaged only 20c. a ton below those of the first three months of the year. The value of orders on hand June 30, 1931, was \$57,334,794, compared with \$65,803,609 at the end of the previous quarter and \$59,906,772 on June 30, 1930. Unfilled orders in tonnage were 422,400 on June 30, 1931, compared with 495,500 tons on March 31, 1931, and 454,000 tons on June 30, 1931. Mr. Grace explained that the unfilled tonnage figures are not so significant, that the figures of unfilled business in terms of dollars are more significant than those in terms of tons, since the latter do not adequately measure shipbuilding and other activities of the company in which the quantity of material used is a poor indication of the value of the work done.

Operations averaged 41.5 per cent of capacity during the second quarter, as compared with 50.8 per cent during the previous quarter and 69.3 per cent during the second quarter of 1930.

Recent Rise in Operations a Surprise

Mr. Grace declared that he saw no indication of a pick-up in business, and he said that current buying was not supporting the present 37 per cent operating rate, adding that he did not expect August to be as favorable a month as July. When asked whether he looked for improvement in September, he replied that he thought prayers were more in order at the present time than predictions. He did admit, however, that the operating rate of his company had recently been lower than 37 per cent and that the rise to that figure had been a gratifying surprise, since the management had

planned for a rate of 33 per cent at this time.

No Opposition to Rail Rate Advance

Mr. Grace stated that there was no new business in shipbuilding and that Bethlehem's shipyards were now completing orders resulting from the spurt in activity last year. He saw no indications of improvement in railroad buying, but declared that if the carriers got additional revenue it would be reasonable to expect them to spend more. He added that he had no knowledge of any official opposition in the steel industry to the application of the railroads for a freight rate increase.

He was asked whether the failure of the international conference at London to reach its objectives had had an unfavorable influence on the steel business, and replied that, in his opinion, the debt negotiations had been by no means fruitless, but, on the contrary, had yielded constructive accomplishments. He stated, however, that it is too early for those results to be translated into tangible effects on the American business situation.

While Mr. Grace refused to take the role of a business prophet, he emphasized that the current status of the steel industry has encouraging as-

pects. In 1921 Bethlehem's average operations for the entire year were only a fraction above 27 per cent of capacity. Steel companies today, he said, are in a much stronger and sounder position than in previous depressions.

No Formal Consideration of Wage Cuts

President Grace declared that the Bethlehem Steel Corp. has made no changes in its wage rates and added that he was not aware of any formal consideration of wage reductions in the steel industry. He explained that through the "stagger" plan of employment his and other companies were trying to keep a maximum number of men at work, and he believed that the record of the industry in this respect was a commendable one. The principle of dividing up work has been continued without change, even at recent low rates of operation, and in some instances it has been possible to give employees only one day of work a week.

Bethlehem salaries have not been cut, Mr. Grace said, but in certain cases where available work has diminished salaried employees have had their hours of work reduced. Those working under salary-and-bonus arrangement have automatically suffered decreases in income, since reduced business has operated against the bonuses. Mr. Grace revealed that the recent revision of the bonus plan under which salaries were raised and bonuses cut has already been put into effect.

National Steel Corp. Earned \$1.60 a Share

The National Steel Corp., Pittsburgh, in the six months ended June 30, had a net profit of \$3,459,376 after all charges, equivalent to \$1.60 a share on the 2,156,832 shares of common stock outstanding. This compares with a profit of \$6,100,915 in the corresponding period of last year, or \$2.84 on stock outstanding at that time.

"Stocks of steel in consumers' hands are of absolutely minimum size and prices are steady. Firming in prices would probably stimulate demand, as would even slight industrial improvement," Ernest T. Weir, chairman of National Steel Corp., stated in making public the earnings.

Quarterly Reports

Colorado Fuel & Iron Co. reports deficits of 389,061 for the second quarter and of \$636,276 for the half year, after all charges except Federal income tax and provision for equipment retired. These figures compare

with profits in 1930 of \$324,896 in second quarter and \$1,619,054 in first half year. Figures for 1931, according to the statement, "reflect change of common stock from par value to stock without nominal or par value."

Interlake Iron Corp. reports a net loss of \$264,762 for the second quarter of 1931. Net income for the preceding quarter was \$69,455, equal to 3c. a share on 2,000,000 no-par shares. In the three months ended June 30, 1930, net profit was \$532,632, or 26c. a share.

Allis-Chalmers Mfg. Co. in the second quarter earned a net profit of \$523,254 after all charges, including Federal taxes, equal to 40c. a share on 1,295,000 shares. This is to be compared with \$1,180,603, or 94c. a share, earned in the second quarter of 1930. Unfilled orders as of June 30, last, aggregated \$9,032,531, compared with \$11,517,082 on March 31, 1931, and with \$17,833,860 on June 30, 1930.

Link-Belt Co. and subsidiaries report for the six months ended June 30 a net profit of \$451,981, after all charges, including Federal taxes, equal after preferred dividends to 45c. a share on 709,177 shares of common stock. In the first half of 1930 the

company earned \$1,306,199, or \$1.65 a share.

General American Tank Car Corp. and its subsidiaries report for the second quarter net income, after all charges, of \$1,271,000, compared with \$1,204,000, in the first quarter of 1931. This is equivalent to \$1.55 a share on the 818,833 shares of no-par capital stock outstanding. In the first half of 1931 net earnings were \$2,475,000 or \$3.02 a share.

Cutler-Hammer, Inc., reports for the six months ended June 30, a consolidated net loss of \$270,086 after all charges, compared with a net profit of \$802,807 after all charges, including Federal taxes, in the like period of last year. Earnings for the 1930 period were equal to \$2.43 a share on 330,000 shares of no-par capital stock.

Inland Steel Co. reports net profits for second quarter, after interest, depreciation, depletion and Federal taxes, \$772,757. This is equivalent to 64c. a share. A dividend of 62½c. a share was declared. In the first quarter of the year profits were \$633,873, or 53c. a share. In the second quarter of 1930 the total was \$2,620,300, or \$2.18 a share. For the first half of 1931 the income of \$1,406,630 was \$1.17 a share. This compares with \$5,341,618, or \$4.45 a share, in the first half of 1930.

Republic Steel Corp. had net loss in the June quarter of \$1,092,305, compared with loss of \$1,692,593 in the preceding quarter, making total loss for the six month of \$2,784,898. In the first six months of 1930 the company had net profit of \$1,643,241.

Wheeling Steel Corp., in the quarter ended June 30, had net loss after all charges of \$588,205. This compares with a loss of \$628,623 in the previous quarter, and with a profit of \$1,098,356 in the second quarter of 1930. Net loss for the first half of 1931 amounted to \$1,216,828, compared with a profit of \$2,351,581 in the like 1930 period.

Pittsburgh Screw & Bolt Corp. had an indicated net loss in second quarter of \$84,480, compared with a profit of \$3,628 in the preceding quarter, and with a profit of \$470,716 in the second quarter of 1930.

Westinghouse Air Brake Co. and subsidiaries had profit in the three months ended June 30 of \$963,241, compared with \$990,529 in the preceding quarter and with \$1,827,459 in the second quarter of 1930. Net profit for the first six months of 1930 totaled \$1,953,770, compared with \$4,014,909 in the like 1930 period.

Blaw-Knox Co., Pittsburgh, had net profits in the first half of 1931 of \$632,761, equivalent to 48c. a share on the 1,322,395 shares of capital stock outstanding. In the corresponding period of 1930 the company's profits totaled \$1,694,002, or \$1.28 a share on common stock.

German Economic Conditions Force Emergency Export Sales

(Special Correspondence)

HAMBURG, GERMANY, July 22.

A BRIEF survey of the present economic condition of Germany seems to indicate that unless there is some unforeseen development internationally, drastic reductions in export prices of German commodities, including iron and steel, will be made, which in the end will ruin many German companies, but at the same time will force down the world market level for their foreign competitors.

In German financial circles it is considered surprising that the financial collapse preceding the debt moratorium did not occur long ago. While reparations payments absorb only about 9.8 per cent of total Government expenditures, these must be paid in dollars and pounds sterling. Recently Sir Josiah Stamp in Great Britain remarked that Germany had not yet started to pay reparations, as everything has so far been paid from borrowed money. In the past eight years Germany has borrowed abroad about \$9,500,000,000, of which sum 55 per cent went for reparations payments, about 15 per cent was used to offset unfavorable trade balances, 20 per cent was for reconstruction of trade and industry in Germany and 10 per cent went for Government expenditures, some of which are conceded as having been unnecessary.

In 1914, German capital invested abroad amounted to about \$4,500,000,000, and Germany owed about \$2,000,000,000. This plus favorable trade balance from exports and shipping brought Germany an annual income of about \$500,000,000. The war, however, deprived Germany of all colonies and all investments abroad, mostly seized and liquidated, and the inflation of the mark impoverished fully 75 per cent of the population. By 1924, Germany had only about \$500,000,000 invested abroad and had an unfavorable trade balance to the extent of nearly \$750,000,000 annually in the years 1920 to 1928. Meanwhile reparations had to be paid and money was needed for reconstruction of industry, which led to the heavy borrowings culminating in the present \$9,500,000,000 of indebtedness.

Since 1929, Germany has had a favorable trade balance, in the first half of this year about \$200,000,000. But the unfavorable balance of payments to be made has increased because of interest and amortization charges. The interest alone is about \$650,000,000, and amortization amounts to about \$1,000,000,000. When foreign financial circles realized that Germany was completely insolvent, loans from abroad ceased, and today, not only is Germany unable to pay reparations, but many of the for-

eign investments in Germany are threatened. To save these private investments drastic reduction of interest on old loans would be necessary to permit Germany to maintain a favorable balance of trade without exporting many times such a balance in payment of war debts, reparations, etc. In addition, it would be necessary to aid German industry materially in shipping its products into foreign consuming markets.

Such an alternative is regarded here as impossible and the immediate consequences are beginning to be felt by industry. Great increases in bank rates are forcing small and many large producers to dispose of their plants and equipment, selling at whatever price is obtainable to meet payrolls and pay off indebtedness to the banks, which are in some instances charging up to 25 per cent annually. This is being accompanied by sharp reductions in prices, and resultant ruin to the companies selling at such levels. The ultimate effect on Germany's domestic and foreign trade cannot as yet be predicted, as the emergency sales for export have just started, with prices of most products rapidly moving downward.

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Chain Belt Co. Adds to West Milwaukee Works

The Chain Belt Co. is completing an addition to its construction equipment manufacturing plant at its West Milwaukee works. The new addition is being built especially for the engineering, testing and experimental work on the entire Rex line. The building will be 89 x 104 ft., one story high and in two sections, a high bay section and a low bay section. The high bay section will be equipped with a crane. Part of the low bay section will be occupied by the engineering offices.

The West Milwaukee works of the company now consists of a malleable iron foundry, a conveyor manufacturing plant, annealing, furnace room, core rooms, engineering building, cafeteria and power plants. The main office and other plants of the company are on the Sixteenth Street Viaduct, Milwaukee. It also owns and operates the Stearns Conveyor Co., Cleveland, manufacturer of belt conveyors.

▲ ▲ ▲

Yoder Co., Cleveland, machinery builder, has appointed William Wulf Co., 850 Maccabees Building, Detroit, its sales representative for the Detroit territory. Harry G. Masten Co., 5229 Kimball Avenue, Chicago, has been designated to represent the Yoder Co. in the Chicago district.

MACHINERY EXPORTS SLIGHTLY HIGHER IN JUNE

WASHINGTON, July 31.—Exports of machinery in June rose to a value of \$28,303,708 from \$26,620,583 in May. When compared with the corresponding period of last year, exports in the first six months of 1931, valued at \$197,143,197, reflected a decline of \$115,332,112, or 37 per cent.

Agricultural implements continued to be the outstanding item showing a sharp fall in exportations. Exports of these products in June were valued at only \$2,083,000.

Important increases were made, however, in June over May. Oil-well machinery rose to a value of \$842,000 from \$648,000; mining and quarrying machinery increased to \$1,073,000 from \$896,000; machine tools made a sharp gain to \$4,084,000 from \$2,281,000; other metal-working machinery rose to \$418,000 from \$277,000.

Imports of machinery, as listed in THE IRON AGE table, declined to \$905,872 from \$1,176,562 in May, and \$2,086,439 in June of last year. The table on imports as printed here covers the entire month of June, 1930, and the entire six months of last year. It consequently is different from figures presented originally (page 367, Aug. 7, 1930), since the latter covered only the first 17 days of June, 1930, due to the fact that the Hawley-Smoot act went into operation on June 18.

Imports of Machinery Into the United States

	June		Six Months Ended June	
	1931	1930	1931	1930
Metal-working machine tools.....	\$11,772	\$122,843	\$117,173	\$621,035
Agricultural machinery and implements.....	261,164	473,254	2,544,107	7,152,919
Electrical machinery and apparatus.....	120,448	140,655	828,323	664,122
Other power-generating machinery.....	28,961	98,872	162,478	335,423
Other industrial machinery.....	337,808	882,182	2,380,651	4,790,455
Vehicles, except agricultural.....	145,719	368,633	1,450,318	1,736,896
Total.....	\$905,872	\$2,086,439	\$7,483,050	\$15,300,850

Machinery Exports from the United States

(By Value, in Thousands of Dollars)

	June		Six Months Ended June	
	1931	1930	1931	1930
Locomotives.....	\$4	\$38	\$98	\$415
Other steam engines.....	21	44	115	358
Boilers.....	43	55	213	911
Accessories and parts.....	21	225	238	528
Automobile engines.....	134	266	1,677	4,565
Other internal combustion engines.....	506	779	2,691	5,199
Accessories and parts.....	185	268	1,244	2,004
Electric locomotives.....	226	65	499	591
Other electric machinery and apparatus.....	377	955	2,456	5,474
Excavating machinery.....	651	1,095	2,116	5,933
Concrete mixers.....	24	73	198	595
Road-making machinery.....	122	314	786	2,355
Elevators and elevator machinery.....	777	470	2,189	3,179
Mining and quarrying machinery.....	1,073	1,451	6,130	9,387
Oil-well machinery.....	842	2,219	6,375	15,017
Pumps.....	244	665	1,269	5,122
Bending and power presses.....	290	400	1,993	2,600
Forging machinery.....	491	155	2,111	1,187
Machine tools.....	4,084	1,823	15,622	14,727
Other metal-working machinery and parts.....	418	314	2,034	2,248
Textile machinery.....	550	705	360	4,787
Sewing machines.....	318	613	2,165	4,271
Shoe machinery.....	96	125	571	931
Flour-mill and gristmill machinery.....	16	25	167	201
Sugar-mill machinery.....	94	676	481	1,611
Paper and pulp-mill machinery.....	121	362	758	1,598
Sawmill machinery.....	96	67	369	479
Other woodworking machinery.....	97	178	598	929
Refrigerating and ice-making machinery.....	194	203	1,199	1,849
Air compressors.....	179	509	1,098	3,529
Typewriters.....	736	1,232	5,504	10,062
Power laundry machinery.....	90	121	500	912
Typesetting machines.....	320	209	1,468	2,076
Printing presses.....	144	357	1,266	2,748
Agricultural machinery and implements.....	2,083	7,798	50,064	79,007
All other machinery and parts.....	12,637	17,514	80,521	115,090
Total.....	\$28,304	\$42,368	\$197,143	\$312,475

Decline in Imports of Pig Iron

June imports of pig iron are reported by the Department of Commerce at 9333 gross tons, a drop of 7 per cent from the May total of 10,057 tons. The June movement, however, was about equal to the average of the preceding months of this year and

was much higher than that of June, last year.

As usual, British India led as the main source of supply, furnishing about 80 per cent of the total.

In the first half year imports, at 55,823 tons, showed a decline of 9½ per cent from 1930. In each case India furnished about 70 to 80 per cent of the total, with the remainder split up among several countries.

United States Imports of Pig Iron by Countries of Shipment

(In Gross Tons)

	June		Six Months Ended June	
	1931	1930	1931	1930
United Kingdom.....	296	850	1,641	6,848
British India.....	7,509	4,637	43,686	44,513
Germany.....	...	...	52	50
Netherlands.....	1,251	51	6,146	5,202
Canada.....	77	54	77	392
France.....	...	...	25	...
Belgium.....	...	...	100	...
Norway.....	...	342	86	2,063
Sweden.....	200	855	3,277	1,819
All others.....	...	...	733	666
Total.....	9,333	6,789	55,823	61,553

From United States Department of Commerce.

Scrap Institute Chapters to Inspect Rejections

The first arrangements have been made for cooperation between chapters of the Institute of Scrap Iron and Steel, New York, for inspection of rejected cars. The purpose of this service is to save members the expense of traveling to other districts in case a car is rejected. The weights and grading committees of the Philadelphia and Pittsburgh chapters of the institute have offered to cooperate with members by inspecting any rejected car, and H. A. MacMullan, chairman of the Philadelphia committee, states that eight consuming mills in eastern Pennsylvania have expressed willingness to aid.

The committees will advise the national offices of the institute of the type of material contained in rejected cars, and it is believed that the institute will be able to reduce the causes for rejections by a process of education of its members.

Steel Window Makers Accept Trade Rules

The solid section steel window industry has accepted trade practice conference rules following certain changes in wording made by the Federal Trade Commission. The rules are in two groups, the first relating to practices held to be violations of the law and the second pertaining to subjects accepted by the commission as expressions of the trade.

Sections of the first group include rules against inducing breach of contract, false marking or branding, false statements concerning grade or quality, secret payment of rebates, defamation of competitors, maliciously enticing employees of competitors, threats of suit for infringement, price discrimination, and gifts of money or anything of value to agents, employees of customers or agents or employees of competitors' customers.

The second group includes rules for standard forms of contract, arbitration, accurate cost-finding methods, publishing price lists and making terms of sale a part of published schedules.

Standards Adopted for Galvanized Sheets

American tentative standard specifications for zinc-coated (galvanized) sheets of Bessemer steel, open-hearth steel and open-hearth iron have been approved by the American Standards Associations. Five classes of zinc coatings, applied by the hot-dip process, are covered in the specifications, as follows:

- Class A—Extra-heavily coated sheets not intended to be formed other than by corrugating.
- Class B—Heavily-coated sheets not intended to be formed other than by corrugating and curving to large radii.
- Class C—Moderately-heavily coated sheets for moderate bending.
- Class D—Ordinary coated sheets for general utility.
- Class E—Sheets having lighter, more tightly adherent, coatings to reduce liability of flaking in severe forming.

Class D coatings approximate those of Class C except in medium gages, in which coatings of Class D are appreciably lighter. Class D represents material generally available in warehouse stocks which is not intended for use where relatively long life, represented by Classes A, B and C, or severe forming, represented by Class E, is required.

The standard includes sections dealing with chemical properties and tests, physical properties and tests, base metal tests, coating tests, permissible variations, finish, marking and inspection and rejection. Provisions for minimum requirements when copper is used in the base metal, requirements for weight of the zinc coating, including a table of weight of coatings by ounces per square foot,

provisions for base metal tests, coating tests and weight tests, and a table showing gage range and permissible tolerances in weights of sheets in percentage of theoretical weight, are included in the standard.

Copies of the standard may be obtained from the American Standards Association, 29 West Thirty-ninth Street, New York, at 25c. each.

Industrial Coal Supply for 32 Days

Stocks of bituminous coal in industrial hands in the United States are estimated by the National Association of Purchasing Agents as equivalent to 32 days' consumption at current rates. By-product coke plants have enough coal for 29 days, electric utilities for 59 days, coal gas plants for 68 days, railroads for 26 days, steel mills for 45 days, and other industries for 29 days.

Total stocks July 1, including also anthracite coal, amounted to 28,900,000 net tons. This is an increase of 7½ per cent from the total June 1, being the largest figure since April 1, but otherwise the smallest in more than a year. Industrial consumption in June is figured at 24,690,000 tons, a reduction of nearly 7 per cent from consumption in May and much the lowest for any month in considerably more than a year.

Welded Steel Condenser of Large Size

What is thought to be the largest welded steel condenser ever manufactured is now being built by the Westinghouse Electric & Mfg. Co. at its South Philadelphia works for the Public Service Electric & Gas Co. of New Jersey. It is a 65,000-sq. ft. condenser of the single-pass, radial-flow, welded steel plate construction and will serve a 75,000-kw. single-cylinder turbine generating unit. It is a decided departure in condenser manufacturing, utilizing the principle of welding in a new field.

Develops Stainless Hub Cap Easily Attached

Budd Wheel Co., Philadelphia, has developed a rustless steel hub cap for wire wheels, known as Snapgard. It fits snugly around the hub cap and is intended to add to the appearance of the wheel, at the same time being highly resistant to damage from dirt, gravel, cinders and other particles from the road which might mar paint. Like the snap spokes recently brought out by the same company, the new guard may be attached easily and is said to be no more expensive than a good paint coating.

Small Factories Number Seven-Eighths of Total

Only ¼ per cent of the manufacturing establishments in the United States employ over 1000 wage earners, according to census figures; only 1.4 per cent employ over 500; and only 3.4 per cent employ more than 250. The one-half of 1 per cent employing over 1000 wage earners employ in the aggregate nearly one-quarter of the total number of wage earners in manufacturing industry. Nevertheless, plants that employ 500 or fewer workers employ collectively 61.9 per cent of the total.

If an even more strict interpretation is placed on the question of what constitutes a small plant, says the National Industrial Conference Board, and establishments that employ not more than 100 workers are considered, it is found that 87.2 per cent of manufacturing establishments fall within this group and that the 28.8 per cent of wage earners employed by them constitute a larger number than the 24.1 per cent employed by the large establishments with more than 1000 workers.

Since both large and small plants are highly successful and both large and small plants also are in the marginal group of companies that maintain their existence with difficulty, size is obviously not the determining factor. It comes down to a question of management, and, where an alert, able management is in control, the Conference Board holds, is found a company that is making the most of its opportunities regardless of size. There seems to be no reason, according to this analysis, aside from that of efficient management, why the highly developed technique of the large plant cannot be adapted to and applied in the small plant.

General Motors to Have Chicago Fair Building

Contracts have been signed for the erection of a special building, to cost approximately \$1,000,000, to be devoted exclusively to the display of General Motors' products at the Chicago International Exposition in 1933, according to statement by W. S. Knudsen, president, Chevrolet Motor Co., and representative for the General Motors Corp'n. A complete automobile assembly line in constant operation is one of the features planned for the new building, which will also contain the complete lines of General Motors products.

Scott Steel Co., 110 South Dearborn Street, Chicago, has purchased the entire inventory of S. W. Lindheimer, Inc., which is retiring from business. Charles I. Lamm, former sales manager of the Lindheimer company, is manager of the Scott Steel Co.'s sheet piling and rail department.

Reinforcing Steel

Awards Slightly Higher—New Projects Lower

BOOKINGS of reinforcing steel the past week totaled 2500 tons, compared with 1950 tons in the previous week. No large jobs were included in the awards, which ranged from 100 to 600 tons. New projects will add 4400 tons to those now pending. The largest inquiry is 1200 tons for a mole at Fish Harbor, Los Angeles. Awards follow:

NEWTOWN, CONN., 600 tons, State hospital, to Concrete Steel Co.
 ATTLEBORO, MASS., 175 tons, bridge, to Truscon Steel Co.
 PROVIDENCE, R. I., 100 tons, Court House addition, to Concrete Steel Co.
 STATE OF MAINE, 100 tons, State roads, to Bancroft & Martin Rolling Mill Co.
 WARREN COUNTY, N. J., 200 tons, road work from Hainesburg to Woodpecker's Point, N. J. to Simon Brothers.
 STATE OF ILLINOIS, 300 tons, road work, to American System of Reinforcing.
 FREEPORT, ILL., 150 tons, addition to Post Office, to Kalman Steel Co.
 LOS ANGELES COUNTY, CAL., 111 tons, storm drains, to Blue Diamond Corp.
 SAN FRANCISCO, 240 tons, recreation pier at Aquatic Park, to an unnamed bidder.
 VENTURA COUNTY, CAL., 100 tons, high-

way under grade, to Concrete Engineering Co.

BRIGHTON, CAL., 220 tons, State highway bridge, to an unnamed bidder.

LOS ANGELES, 100 tons, West Adams Street church, to Badt-Falk Co.

OAKLAND, CAL., 125 tons, Post Office, to Soule Steel Co.

Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

NEW YORK, 350 tons, foundations for Bronx County Court House, 158th Street and Mott Avenue; previously reported as 100 tons.

CHICAGO, 300 tons, bridge on Harlem Avenue at drainage canal.

CHICAGO, 500 tons, Calumet pumping plant for sanitary district; J. Griffiths & Son, general contractors.

STATE OF ILLINOIS, 700 tons, road work.

FORT WAYNE, IND., 150 tons, Post Office.

COOK COUNTY, ILL., 500 tons, bridge; bids opened Aug. 4.

SANTA BARBARA, CAL., 150 tons, science building at State Teachers' College.

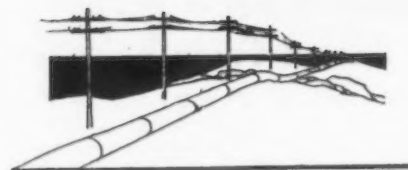
LOS ANGELES, 1200 tons, mole for Fish Harbor.

HOLLYWOOD, CAL., 227 tons, RKO studio.

SAN DIEGO COUNTY, CAL., 118 tons, highway construction near Jacumba.

GARFIELD COUNTY, COLO., 200 tons, Broadway Municipal Pier.

SAN FRANCISCO, 110 tons, Girls High School additions.



PIPE LINES

Central Public Service Corp., 224 South Michigan Avenue, Chicago, has awarded contract to United Engineers & Constructors, 112 North Broad Street, Philadelphia, for a gas pipe line from Owosso, Mich., to St. Johns, Mich., about 19 miles.

Lucey Petroleum Co., Longview, Tex., has awarded a contract to Gregg Construction Co., Longview, for a 6-in. oil pipe line and pumping station for service near Longview, to cost about \$40,000.

City Council, Ruston, La., is arranging bond issue of \$180,000 for installation of a municipal natural gas system, including pipe lines and compressor stations.

Bell Oil & Gas Co., Tulsa, Okla., has awarded a contract to Gregg Construction Co., Longview, Tex., for a 6½-in. pipe line from east Texas oilfield to new refinery near Longview, about 17 miles.

State Purchasing Agent, State House, Trenton, N. J., will receive bids until Aug. 14 for a quantity of water pipe.

Railroad Equipment

Norfolk & Western will build 450 hopper cars in its own shops.

Byers Co. Has Option on Canonsburg Plant

A. M. Byers Co., Pittsburgh, maker of wrought iron products, has taken a six months' option to purchase the Canonsburg Steel & Iron Works, Canonsburg, Pa., maker of black and galvanized sheets. The Canonsburg company, which is controlled by the Edwards Mfg. Co., Cincinnati, was founded in 1902 and has annual capacity for 38,000 tons of black sheets and 16,000 tons of galvanized sheets. It is understood that the company will roll wrought iron sheets in an experimental way for the Byers organization over the next few months.

Simonds Prizes Won by Britishers

The ninth Alvan T. Simonds annual economic contest was won by two Londoners. C. E. R. Sherrington, lecturer in transport, London School of Economics and Political Science, won the first prize of \$1,000, and Frederick Geidt, Morton Brothers, stock brokers, 97 Gresham Street, London, was awarded the second prize of \$500. The subject of the essay competition was "Government Interference with the Free Play of Economic Forces."

This is the first time since the con-

tests were established in 1921 that both prizes were awarded outside of the United States. The judges were Prof. Richard S. Meriam, Harvard School of Business Administration, Cambridge, Mass., and John G. Thompson, assistant to president, Simonds Saw & Steel Co., Fitchburg, Mass.

Celebrates Its Fiftieth Anniversary

Under date of July 2 the venerable journal of the German iron and steel industry, *Stahl und Eisen*, celebrate its 50th anniversary with a special issue. Its pages are devoted mainly to a history of the various stages of the development of the paper and of the German steel industry, together with photographs and brief biographies of its editors as well as some of the leading German metallurgists who have contributed to its pages. It is supplemented with over 200 pages of advertisements, some of them quite elaborate.

Millholland Sales & Engineering Co., Twenty-second and Yandes Streets, Indianapolis, manufacturer of drilling and tapping equipment, is advancing production and plans early start of night shift. Working force will be increased to about 100 men.

Furnace Uses One Lining Nearly Five Years

After operating continuously since September, 1926, nearly five years on the original lining, the Everett, Mass., stack of the Mystic Iron Works went out of blast on July 31. On this first run, 801,230 tons of pig iron was produced.

Consumption of raw materials during this run was as follows: Iron ore, 1,358,970 gross tons; coke, 778,541 net tons; limestone, 152,250 gross tons. While the company has in stock more than 100,000 tons of pig iron, a substantial part of this is represented by unfilled orders.

The furnace will be relined and overhauled for a resumption of operations at a date to be announced later.

Stedman's Foundry & Machine Works, Aurora, Ind., manufacturer of swing and ring hammer crushers, grinders, pulverizers and shredders, has appointed new sales representatives as follows: Goggin & Mills, 407 South Dearborn Street, Chicago; Louis Mardaga, 710 Park Building, Pittsburgh; J. Y. Riffe, 811 Peoples Bank Building, Charleston, W. Va.; S. D. Calloway, 3029 Roanoke Road, Kansas City, Mo.; and Brown Fraser & Co., Ltd., 1150 Homer Street, Vancouver, B. C.



Half of Automobile Industry's Capacity Is Idle— Ford Assembly Plants Still Active

DETROIT, Aug. 3.

STEEL mills can derive slight comfort from the present situation and immediate outlook in the automobile industry. July closed with output for the month estimated unofficially at 200,000 cars, and August probably will bring a greater shrinkage than anticipated, with total assemblies at 160,000 units. During the early days of this month, about half of the industry's capacity is idle. Ford, Oakland-Pontiac, Cadillac-LaSalle, Graham-Paige, Oldsmobile and Reo are among the companies which currently are shut down for vacations.

With August virtually certain to set a new low mark for the year, production figures being likely to hover close to those in the lean fourth quarter of 1930, steel companies serving the automotive trade are turning to the long range view of things in an effort to discern better days ahead. There is little doubt that September will see at least a mild recovery in motor car activities, especially if Ford is in production on a revised model A, which now seems likely. It must be remembered, however, that September is the month when many companies are at the cross-roads, still turning out a conservative number of current models, but likewise devoting much energy to preparations for new cars to be introduced at the end of the year. This means that too much in the way of total assemblies cannot be expected from these makers, so that possible gains by Ford and a few other manufacturers may be offset by losses in other directions.

Aside from a revival of buying by Ford, steel executives seem resigned to the fact that bookings from the Detroit district will be meager until output of 1932 cars gets under way. However, they are counting somewhat

July motor car output estimated at 200,000 cars, August at 160,000. Mild gain in production expected in September.

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Ford's Rouge plant closed for vacation period. Branch assembly plants, however, will assemble about 100,000 cars in next 60 days.

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Ford, Cadillac-LaSalle, Graham-Paige, Oldsmobile, Reo and Oakland-Pontiac, as well as numerous parts makers, are closed. This represents half of the industry's capacity. Chevrolet, Chrysler, Studebaker, Nash, Hudson and Packard will not close during the summer.

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New models supplementing present lines offered by Dodge, Hudson, Auburn, Stutz and Reo.

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on an upward turn in orders the latter part of this month to furnish a much needed impetus to the market.

Ford Assembly Plants Still Operating

The Ford Motor Co. closed its Rouge works on Aug. 1 for the annual vacation period, during which inventories will be taken. No statement has been made relative to the length of the shut-down, but it is expected to be two weeks to a month. It has been pointed out that since the introduction of the new Plymouth, which overnight has become an important factor in the low-priced field, it is increasingly im-

perative that the Ford suspension be as short as possible in order that its competitive position be maintained. Although the manufacture of parts and assemblies of motors have been halted at Dearborn, Ford assembly plants throughout the country still are operating, drawing on a large bank of parts built up in recent months. The official pronouncement of the Ford company declares that when activities are resumed, production of model A passenger cars and model AA trucks will be continued and that schedules call for 100,000 of these units in the next 60 days. Since Ford output is measured by the number of units coming off assembly lines, suspension of work at Rouge does not mean that there will be no Ford units included in August production figures for the industry. Although Ford's June total has not been revealed, it is believed to have been 75,000 to 80,000 cars, with July running around 60,000 to 65,000.

While it is true that model A will be continued at the end of the vacation period, it will probably be a considerably changed car from the present one. These changes will be in the direction of making the car bigger and sturdier, and efforts will be made to eliminate vibration, thereby meeting the main talking point of the Plymouth. If this program is carried out, as Detroit fully expects, Ford's Rouge plant should be operating at a high rate in September, and this activity, in turn, should be reflected in a betterment among Ford suppliers, including Briggs and Murray Body.

In considering the position of the Ford company, one should not forget that Mr. Ford has placed much reliance on the belief that, comparing part for part, he is offering the best

value in the industry. That is, he believes that the buying public will recognize the superior wearing quality and appearance, for instance, of rustless steel as against other materials. No other manufacturer approaches Ford in the extensive use of rustless steel and it is understood that any contemplated changes in nowise affect specifications for this material.

Shipping Plymouth Parts by Airplane

While the course which Mr. Ford intends taking is the main topic for discussion in Detroit, Plymouth continues to share the center of the stage. Its July record is put at 21,000 cars, with a possibility that August may reach 30,000. Its rapid expansion has confronted the Chrysler people with several emergencies. One is provision for more manufacturing space at the local plant, where an addition amounting to 30,000 sq. ft. of floor area is being erected under rush orders. Rubber motor mountings are being sent four times daily from Cleveland to the Detroit Plymouth plant by airplane. Through special arrangements with Transamerican Air Lines, these rubber shipments are being given preference over passengers during the emergency. Supplementing these air line cargoes is a shipment every night by express train. Plymouth is providing unusual activity for several foundries at Port Huron, Mich., and Indianapolis, which are casting cylinder blocks.

Chevrolet is going along according to previously announced schedules and its August assemblies may be as high as 55,000 units. It has been announced that Chevrolet, Buick, Chrysler, Nash, Studebaker, Hudson and Packard will not close during the summer. There was a report published recently that Buick is getting ready to present a new car before the summer is out, but this statement obviously is incorrect, as Buick has repeatedly advertised the fact that it will not offer new models until the end of the year. Buick's president, E. T. Strong, says that the company's annual inventory will be taken in September instead of in December, as has been the custom in the past, and that no new Buick models will be available prior to December. The tooling up for new models in September means that the Buick working force will be employed steadily during the winter months, when idleness is least desired.

Plymouth broke all production records in July. Although no figures have been announced, output is believed to have been about 20,000 cars. Plymouth led all makes in Wayne County, Mich., last month, having registered 1249 cars. Auburn shipped 2580 cars in July, compared with 3205 in June and 646 in July, 1930. Shipments for the first seven months of this year totaled 30,240 cars, or 16,549 more than in the entire year 1930. Nash turned out 6039 cars in July. Its production in the last two months aggregated 12,000 cars, against 11,000

in June, July and August of last year. Buick built 5320 cars during July, compared with 6479 in June and 15,600 in July last year, when its new line of standard eights was being introduced.

New Offerings by Motor Car Builders

Automobile makers still are supplementing their present lines with new cars, as witness the announcements in the past 10 days. Dodge has added three de luxe models to its list of six and eight-cylinder passenger cars, with free wheeling optional at extra cost of \$20. Auburn is presenting a seven-passenger sedan on a 136-in. wheelbase with an overall length of 181 in. It sells at \$1,195 for the standard model and \$1,395 for the custom job. Stutz has come into the picture again with a new Bearcat, powered by an eight-cylinder, 32-valve engine. The roadster of this series is guaranteed to do 100 miles an hour. Hudson has put on the market a special sedan in light ocean gray with white striping set off by dark gray fenders and body belt. Headlamp brackets are painted to match the fenders. Special features include six wire wheels fitted with snap-on stainless steel spoke covers and two chromium-plated metal tire covers. The windshield frame and hinge, windshield cleaner arms, bonnet locks, handles and bonnet hinges, brackets for tail lamp and stop light, and license plate bracket are chromium-plated. The windshield is of shatter-proof glass.

Chevrolet has recently revealed figures of uncommon interest about its fleet sales. In the first six months of 1931 the volume was 9.4 per cent ahead of the same period last year, 71 per cent over the first six months of 1929, and came within 2000 units of equaling the full year of 1929. These figures include passenger cars and trucks purchased by large companies which contract to take a given amount of equipment in a specified period. This shows that Chevrolet is progressing rapidly in the truck field, where it has put special effort this year by purchasing the Martin-Parry truck body plant at Indianapolis and by establishing regional assembly stations.

Reo is about ready to announce a new Flying Cloud eight in the sedan, coupe and victoria types at \$1,745, f.o.b. Lansing. This car is modeled after the Royale and Flying Cloud now on the market, with its aerodynamic design stressed. It possesses the V-type radiator, slanting windshield, and body which is so constructed as to conceal at the rear the gas tank, springs and frame ends. The car is to be known as the 8-25.

Aside from the Chevrolet foundry at Saginaw and a few foundries supplying Plymouth, the foundry trade is seasonally slack. The Ford, Oakland-Pontiac and Cadillac foundries are down, and Buick is operating at a low rate. There is some talk about all of the Oakland-Pontiac work now

done in its foundry at Pontiac being transferred to the Buick foundry at Flint. This would mean that the Buick foundry would be well engaged most of the time, while the Oakland foundry, a comparatively new structure, would be idle.

It is reported that considerable attention will be paid by General Motors in its 1932 models to improvements in transmission, and there is a possibility that free wheeling may be incorporated. It is understood that free wheeling, before it was first adopted by Studebaker a year ago, was offered to General Motors, which believed that it would gain slight favor. With free wheeling spreading rapidly in popularity, it seems assured that General Motors will do something more than offer its present synchro-mesh transmission as a substitute.

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Announces Jig Design Contest

Designers and toolmakers are invited to participate in a competition announced by the American Machinery and Tools Institute, 40 North Wells Street, Chicago, for the design of the best drill jig in each of the several types specified to be used as model jigs in its standardization work. Certificates of merit will be awarded for the three best designs of each type as judged by a committee of prominent engineers.

Sketches or drawings are to be submitted before Oct. 30, when the 10 best designs of each class will be selected and finished drawings requested for the final decision on Nov. 30.

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Putnam Machines to Be Made at Hamilton

Following the recent acquisition of the Putnam Machine Tool Co., Fitchburg, Mass., and its affiliated organization, the Dietrich & Harvey Co., the General Machinery Corp., Hamilton, Ohio, is planning for transfer of operations to the Hamilton plant of its subsidiary, Niles Tool Works, where production will be concentrated.

The Hooven, Owen & Rentschler Co., Hamilton, manufacturer of engines, compressors, etc., another unit of General Machinery Corp., has secured a large order for Diesel engines for a municipal plant, consisting of five units for a power plant at Vernon, Cal., to cost \$2,000,000.

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Logan Iron & Steel Co., Philadelphia, has removed its office to the Broad Street Station Building, Sixteenth Street and Pennsylvania Boulevard.

PERSONALS

S. LIVINGSTON MATHER, vice-president, Cleveland-Cliffs Iron Co., and president of the American Mining Congress, will be among a group of leaders in the mining industry who will address the Western division of the congress at its annual meeting in Joplin, Mo., Sept. 28, 29 and 30. Mr. Mather will speak on what the mining industry is doing to promote industrial prosperity.

PROF. H. F. MOORE, of the University of Illinois, Urbana, will sail for Europe on the American Farmer on Aug. 7. He will visit the British National Physical Laboratory, among other places. Early in September he will go to Zurich to attend the meeting of the International Association for Testing Materials, and will return about Oct. 5.

CHARLES MCKNIGHT, research metallurgist of the International Nickel Co., New York, left Aug. 1 to take part in the yacht races which are to be run this week from Boston to the Bay of Fundy.

FRANK W. JONES, who for many years was Philadelphia district sales manager, Eastern Steel Co., Pottsville, Pa., now defunct, and who recently became associated with the Hanover Wire Cloth Co., Hanover, Pa., was elected president and general manager and a director of that company July 31. He started his business career in 1901 with H. W. Middleton Co., then a leading heavy hardware and iron and steel jobber. Three years later he entered the sales department of Carnegie Steel Co., Philadelphia, and subsequently became connected with the Eastern Steel Co. He was also general sales manager for the Warwick furnaces, leased and operated by the Eastern Steel Co. until 1926. Mr. Jones was one of the organizers of the Steel Club of Philadelphia.

L. S. HAMAKER, advertising manager, Republic Steel Corp., at Massillon, Ohio, has been made manager of sales promotion, with headquarters in Youngstown.

E. O. BEARDSLEY and W. F. PIPER, of the Beardsley & Piper Co., Chicago, manufacturer of foundry equipment, will leave by airplane on Aug. 5 for an extended business and pleasure trip throughout the Western part of the country. They will go west through Calgary to the Pacific Northwest and follow down the coast to Mexico before returning to Chicago.

They are flying a Vega airplane, which is the sixth machine used by this company for business purposes.

ELMER B. HAINES, assistant sales manager, Pratt & Whitney Aircraft Co., Hartford, Conn., is on his way to China where he will represent the United Exports Co. of New York, division of the United Aircraft & Transportation Co., in its negotiations with the Chinese Government for the purchase of motors and aircraft.

LESLIE C. HASWELL, purchasing agent, the past three years, of the Chapman Valve Mfg. Co., Indian Orchard, Mass., has resigned. Mr. Haswell was associated with the company 24 years, the last 18 in the purchasing department. JOHN J. DUGGAN, treasurer, will assume control of the purchasing department, and FRANK E. PHILLIPS will have active charge of details.

MARCUS H. HOLCOMB, for the past 32 years a director of Peck, Stow & Wilcox Co., Southington, Conn., has declined reelection due to a minor physical ailment. Mr. Holcomb formerly was Governor of Connecticut, and is a director of the National Fire Insurance Co. of Hartford, the Southington Hardware Co., the Southington Bank & Trust Co. and president of the Southington Savings Bank, positions he has not so far indicated he will relinquish.

ALFRED LEROY ATHERTON has been appointed head of a new metal tank mercury arc rectifier division in the circuit breaker engineering department of the Westinghouse Electric & Mfg. Co., East Pittsburgh, according to an announcement by R. S. FEICHT, director of engineering.

LEO H. MARKS has been made president and general manager of the Federal Steel Corp., Detroit, to succeed his brother, Harry J. Marks, who was drowned recently attempting to rescue his niece.

GEORGE H. KUBLIN has been appointed chief engineer of the Auburn Automobile Co., Auburn, Ind. He has been assistant chief engineer for three years and has been associated with the automobile industry for the past 17 years.

GEORGE C. MCCORMICK, chief engineer, General Alloys Co., Boston, has

been elected a vice-president of the company.

GEORGE R. WOODS, manager of R. S. Stokvis & Sons, Inc., 17 Battery Place, New York, will sail Aug. 15 for a short visit in Europe.

T. R. LANGAN has been appointed Northeastern district manager for the Westinghouse Electric & Mfg. Co. and will have headquarters at East Pittsburgh. He has been identified with the company for about 20 years.

ELLSWORTH TONKIN has been appointed acting superintendent of the forge division of the Union Switch & Signal Co., Swissvale, Pa., succeeding C. J. Clinger, who has resigned. Mr. Tonkin has recently been engineer in the forging department and will continue his duties in that capacity.

Commends Directors of Steel Corporation

"Management in many industries has been fighting the battle of the wage earner and in doing so has been resisting strong pressure on the part of stockholders," declared Douglas S. Keogh, president, Charles E. Bedaux Co. of New York, Inc., engineer, whose survey of wage cuts in 34 different lines of manufacture was published in THE IRON AGE of June 18, page 1998. "The temptation to weaken and to cut wages in order to curry the approval of stockholders has been strong. The action of directors of the Steel Corporation therefore establishes a precedent in a key industry which, by reducing dividends first, salaries second, and wages last, if at all, lends to the management of smaller industries some much needed moral support.

"If stockholders in all our industries will consent to accept smaller dividends on their invested capital and thus make possible the fullest employment of our wage-earning class at the best rates industry can afford to pay, then the depression will be short lived and America will soon find itself on the highroad to prosperity.

"The decision (of Steel Corporation directors) tacitly adopts the economic policy which recognizes that the wage-earning class comprises the bulk of the nation's purchasing power. Under this policy, any curtailment of the purchasing power of the wage earners inevitably results in shrinking the consumer market for all the products of this mass production age we live in."

OBITUARY

S. M. CHASE, vice-president and general manager, Chase Foundry & Mfg. Co., Columbus, Ohio, died at his home in Columbus, July 20, aged 69 years. Mr. Chase spent his entire business career in the iron and steel equipment industries, having started when a young man with the F. E. Myers & Brother Co., Ashland, Ohio,



S. M. Chase

pump and farm machinery makers. He later organized and became president of the Chase Pump Mfg. Co. of Canton, which subsequently was moved to Columbus. About 30 years ago, he disposed of his interests in the pump manufacturing business and organized the Chase Foundry & Mfg. Co., in which he was active until the time of his decease. Mr. Chase was a designer and inventor and had a number of inventions bearing his name.

HARRY M. REAM, for many years prominently identified with the abrasive industry, died at his home in Pittsburgh on July 29, aged 52 years. At the time of his death he was serving as treasurer of the Steel Shot & Grit Co., Amesbury, Mass.; the Globe Steel Abrasive Co., Mansfield, Ohio; the American Steel Abrasive Co., Galion, Ohio, and the Kann Pangborn Co., Pittsburgh, and sales manager of the Pittsburgh Crushed Steel Co., Pittsburgh.

WILLIAM STUART LLOYD, for more than 50 years in the iron and steel business in Boston, died July 29 at the home of his daughter in Brookline, Mass., following a short illness. In 1880 he entered the employ of his father, George H. Lloyd, as an errand boy, and subsequently became one of the managing partners of the con-

cern. Associated with him in business were two brothers, Augustine M. and Edward H. Lloyd.

ELMER E. ARING, for 13 years purchasing agent of the Foote-Burt Co., Cleveland, died July 27, aged 38 years. In 1928 and 1929 he was secretary of the Cleveland Purchasing Agents' Association.

JOSEPH A. DOYLE, auditor and for more than 42 years an employee of the Jones & Laughlin Steel Corp., Pittsburgh, died at his home at Beaver, Pa., on Aug. 2 after a brief illness. He became identified with the company as a clerk in the pay office at South Side works, Pittsburgh, and was advanced through various positions until he was made auditor in 1919. He was prominent in civic and fraternal circles in the Beaver Valley and at Pittsburgh.

Radio Parts Maker Increases Operations

Following the booking of orders for more than 1,000,000 resistance units from several of the principal manufacturers of radio receiving sets, the Allen-Bradley Co., Milwaukee, has increased its force from 150 to 660 workers during the past fortnight. This brings the payroll close to the peak. The orders include large requisitions from the Radio Corp. of America, Grigsby-Grunow Co., United States Radio & Television Corp. and others.

11,165,389 Tons of Pig Iron in First Half

PRODUCTION of pig iron in the first half of 1931 is reported by the American Iron and Steel Institute at 11,165,389 gross tons, and of ferro-

alloys, 268,388 tons, making a total of 11,433,777 tons. This is a drop of 13.9 per cent from the total for second half of 1930 and of 38.1 per cent from that for first half of 1931. The greatest output in any half-year was the 21,820,060 tons in the first half of 1929.

Particulars of the production are covered in the table, with comparisons with the two next preceding half-years.

Eleven Sizes of Reinforcing Bars

Simplified practice in steel reinforcing bars, limiting the cross-section areas to 11 sizes, has been approved through the Department of Commerce in connection with the annual survey of the matter for revision. This was brought up first in September, 1924, and has been subjected to annual renewal since that time. The sizes covered in the simplified practice, together with the practical bars employed in filling the recommendation, are as follows:

Sectional Area	Sizes and Sections of Bars
0.05 sq. in.	1/4-in. round
0.11 " "	3/8-in. round
0.20 " "	1/2-in. round
0.25 " "	5/8-in. square
0.31 " "	3/4-in. round
0.44 " "	7/8-in. round
0.60 " "	1-in. round
0.79 " "	1-in. square
1.00 " "	1 1/4-in. square
1.27 " "	1 1/2-in. square
1.56 " "	1 3/4-in. square

Offers Courses in Works Management

Two-year and four-year courses in works management are announced by the Carnegie Institute of Technology, Pittsburgh. They are stated to be of special interest to the foundry industry and to young men who wish to enter that industry. A formal certificate is presented to those who satisfactorily complete the two-year course. A diploma with the degree of bachelor of science in works management is awarded to those who finish satisfactorily the four-year course.

Production of Pig Iron and Ferroalloys (In gross tons)

	First Half of 1931	Second Half of 1930	First Half of 1930
Coke pig iron	11,122,186	12,921,211	18,003,116
Charcoal pig iron	43,203	44,348	52,232
Ferroalloys	11,165,389	12,965,559	18,055,348
	268,388	316,000	415,262
	11,433,777	13,281,559	18,470,610
Basic pig iron	6,651,475	7,553,347	10,840,037
Bessemer pig iron	2,661,451	3,085,017	4,066,064
Low-phosphorus pig iron	31,767	46,952	116,716
Foundry pig iron	1,245,642	1,652,278	1,970,501
Malleable pig iron	517,611	586,898	984,614
Forge pig iron	33,105	21,858	28,839
Miscellaneous pig iron and direct castings	24,338	19,209	48,578
Ferromanganese and spiegeleisen	144,728	152,248	210,139
Ferrosilicon	108,263	150,757	186,882
Ferrophosphorus and all other ferroalloys	15,397	12,995	18,241

Pig Iron Production Lowest Since 1921— Net Loss of Nine Furnaces

TWELVE blast furnaces were blown out during July and three were blown in, making a net loss of nine and bringing the number of active stacks to 82. This compares with 91 on July 1, with a recent maximum of 116 on April 1, and with 82 almost ten years ago, Oct. 1, 1921, the most recent date when so low a number was active.

Coke pig iron production in July was 1,463,220 gross tons, a decline of 10.7 per cent from the 1,638,629 tons in June. The total was the smallest for July since 1921, when the low figure of 864,555 tons was

registered, the lowest for any month since December, 1903. Current production is about 70 per cent higher than in the nadir of the 1921 slump.

On the daily basis, production was at the rate of 47,201 tons—7420 tons lower than that for June, a drop of nearly 14 per cent. This compares with 53,732 tons last December.

In seven months the total production has amounted to 12,568,593 tons. This shows a drop of more than 8,300,000 tons, or approximately 39 per cent, from the output of the first seven months of 1930. Compared with the record year 1929, when 25,426,080

tons was made in the seven months, the falling off was more than half.

Net Loss of Nine Furnaces

OF the 12 furnaces blown out last month, four belong to the United States Steel Corp., four to independent steel companies, and four to merchant companies. Of the three blown in, two are Steel Corp. stacks and one an independent steel company unit. The net loss of nine, therefore, represents four merchant stacks, three of independent steel companies and two of the Steel Corp.

Furnaces in blast Aug. 1 are esti-

Daily Average Production of Coke Pig Iron in the United States
by Months—Gross Tons

	1927	1928	1929	1930	1931
Jan.	100,123	92,573	111,044	91,209	55,299
Feb.	105,024	100,004	114,507	101,390	60,950
March	112,366	103,215	119,822	104,715	65,556
April	114,074	106,183	122,087	106,062	67,317
May	109,385	105,931	125,745	104,283	64,325
June	102,988	102,733	123,908	97,804	54,621
½ year....	107,351	101,763	119,564	100,891	61,356
July	95,199	99,091	122,100	85,146	47,201
Aug.	95,073	101,180	121,151	81,417	.....
Sept.	92,498	102,077	116,585	75,890	.....
Oct.	89,810	108,832	115,745	69,831	.....
Nov.	88,279	110,084	106,047	62,237	.....
Dec.	86,960	108,705	91,513	53,732	.....
Year	99,266	103,382	115,851	86,025	.....

Pig Iron Production by Districts, Gross Tons

	July (31 days)	June (30 days)	May (31 days)	April (30 days)
New York and Mass....	110,089	88,537	105,104	95,375
Lehigh Valley	43,236	46,743	38,745	43,613
Schuylkill Valley	20,676	27,167	27,936	25,665
Lower Susq. and Leb- anon Valley	11,264	8,142	18,956	18,652
Pittsburgh district	273,084	339,018	441,653	431,116
Shenango Valley	14,381	28,543	55,835	53,893
Western Pennsylvania	35,650	32,519	32,430	55,632
Maryland, Va. and Ky.	56,974	66,589	77,218	78,442
Wheeling district	115,662	117,309	119,310	110,415
Mahoning Valley	126,772	151,870	172,703	175,963
Central and North'n Ohio	133,089	133,525	185,095	194,453
Southern Ohio	28,029	22,573	23,885	26,460
Illinois and Indiana	268,139	317,488	405,511	445,669
Mich., Minn., Mo., Wis., Colo. and Utah.....	66,463	79,608	96,256	77,427
Alabama	159,712	178,996	193,445	186,534
Tennessee .....	.....	.....	.....	220
Total	1,463,220	1,638,627	1,994,082	2,019,529

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works Iron	Merchant Iron*	Total
July, 1930.....	66,949	18,197	85,146
August	64,857	16,560	81,417
September	62,342	13,548	75,890
October	57,788	12,043	69,831
November	49,730	12,507	62,237
December	40,952	12,780	53,732
January, 1931.....	45,883	9,416	55,299
February	49,618	11,332	60,950
March	54,075	11,481	65,556
April	53,878	13,439	67,317
May	51,113	13,212	64,325
June	43,412	11,209	54,621
July	35,189	12,012	47,201

*Includes pig iron made for the market by steel companies.

Coke Furnaces in Blast

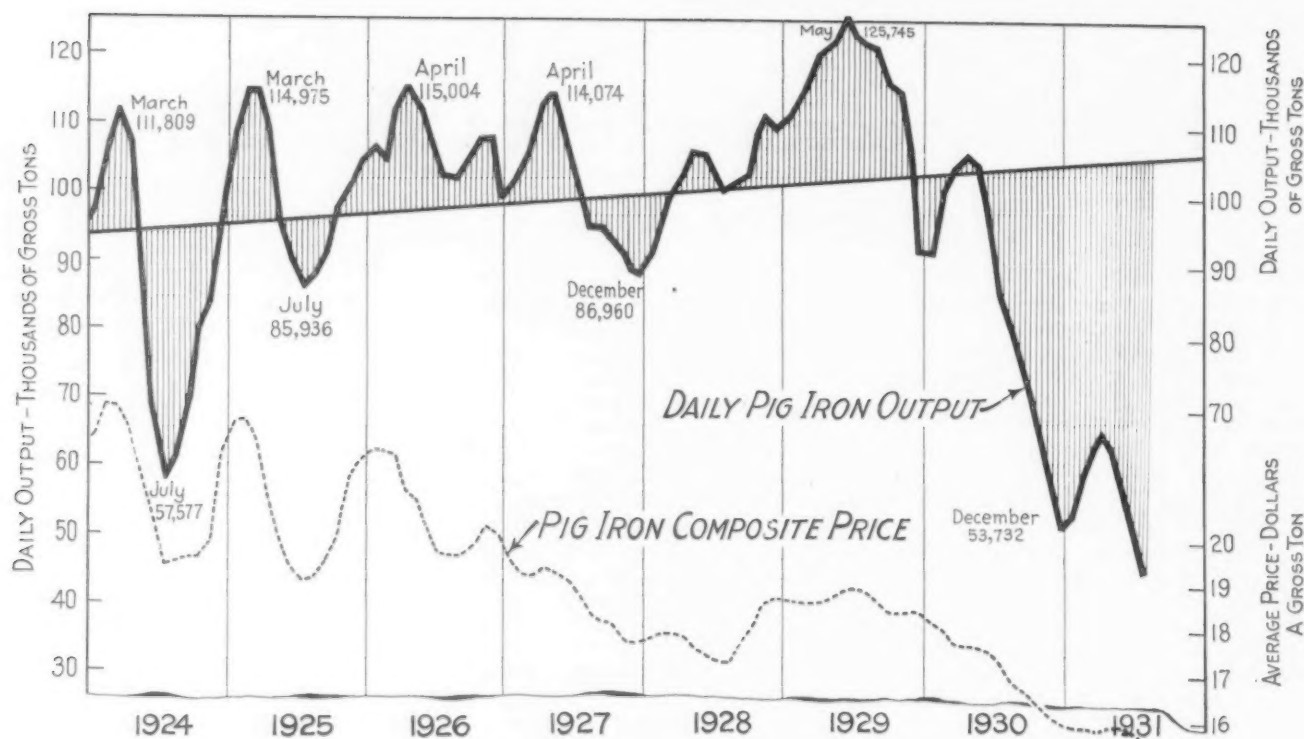
	August 1		July 1	
Furnaces	Number in Blast	Rate of Operation	Number in Blast	Rate of Operation
New York:				
Buffalo	5	2,940	4	2,340
Other N. Y. and Mass.	1	465	2	880
New Jersey	0	.....	0	.....
Pennsylvania:				
Lehigh Valley	4	1,395*	4	1,560*
Schuylkill Valley	1	495	2	905
Susquehanna and Leb- anon Valleys	1	365	1	270
Ferromanganese	0	.....	0	.....
Pittsburgh District.....	11	7,080	16	10,930
Ferro. and Spiegel.....	1	150	1	150
Shenango Valley.....	1	465	1	490
Western Pennsylvania	2	1,150	2	1,080
Ferromanganese	0	.....	0	.....
Maryland	3	1,805	3	1,800
Wheeling District	5	3,730	5	3,910
Ohio:				
Mahoning Valley.....	7	3,695	8	4,465
Central and Northern	9	4,710	8	4,150
Southern	3	905	3	830
Illinois and Indiana.....	13	8,460	13	8,500
Mich., Wis. and Minn....	3	1,525	3	1,510
Colo., Mo. and Utah.....	1	560	2	870
The South:				
Virginia	0	.....	0	.....
Ferromanganese	0	.....	0	.....
Kentucky	1	265	1	415
Alabama	10	5,070	12	5,800
Ferro. and Spiegel.....	0	.....	0	.....
Tennessee	0	.....	0	.....
Total	82	45,230	91	50,855

*Includes spiegeleisen.

Production of Coke Pig Iron in United States by Months
Gross Tons

	1929	1930	1931
January	3,444,370	2,827,464	1,714,266
February	3,206,185	2,838,920	1,706,621
March	3,714,473	3,246,171	2,032,248
April	3,662,625	3,181,868	2,019,529
May	3,898,082	3,232,760	1,994,082
June	3,717,225	2,934,129	1,638,627
½ year.....	21,640,960	18,261,312	11,105,373
July	3,785,120	2,639,537	1,463,220
7 months	25,426,080	20,900,849	12,568,593
August	3,755,680	2,523,921	.....
September	3,497,564	2,276,770	.....
October	3,588,118	2,164,768	.....
November	3,181,411	1,867,107	.....
December	2,836,916	1,665,690	.....
Year*	42,285,769	31,399,105	.....

*These totals do not include charcoal pig iron. The 1930 production of this iron was 96,580 gross tons.



Daily production of pig iron remains further below theoretical needs than in 1924

Inclined line represents the gradually increasing requirements of the country, ascertained by balancing the ups and downs in production. It shows an average increase in consumption of about 575,000 tons yearly.

mated to have been making iron on that date at a daily aggregate rate of 45,230 tons, or 552 tons to the furnace. This compares with 50.855 tons on July 1 for 91 furnaces, and an average of 559 tons.

Some districts held up in July better than did others. In New York and Massachusetts, for instance, there was an actual gain of 24 per cent in output. In the lower Susquehanna and Lebanon Valleys there was a gain of 38 per cent. Western Pennsylvania showed a gain of nearly 10 per cent, southern Ohio increased 24 per cent and central and northern Ohio held within less than one-half per cent of the total for June. The Schuylkill Valley, however, went off 23 per cent, the Pittsburgh district 19 per cent, the Shenango Valley was cut

almost in half, Maryland, Virginia and Kentucky lost 15 per cent, but the Wheeling district held within 1½ per cent. The Mahoning Valley was off 17 per cent. Illinois and Indiana considered together dropped 16 per cent. The group of Michigan to Utah, including scattered miscellaneous furnaces, declined 16 per cent, while those in Alabama dropped off about 11 per cent.

Furnace Changes in July

ONLY three furnaces were blown in in July. One was furnace F at the Lackawanna plant of the Bethlehem Steel Co. in the Buffalo district; one was No. 5 of the National Tube Co. in northern Ohio; and one was No. 4 in the Joliet plant of the Illinois Steel Co. in the Chicago district.

Furnaces blown out include the Mystic furnace in Massachusetts, the Brooke furnace in the Schuylkill Valley, Pa., the Ironton furnace in Utah, and No. 3 Woodward furnace in Alabama. These four are all merchant stacks. Also taken off were No. 2 furnace at the Donora plant of the American Steel & Wire Co., furnaces F and H at the Edgar Thomson Works of the Carnegie Steel Co., leaving all 11 furnaces at that plant idle, and No. 6 furnace at the Ensley plant of the Tennessee Coal, Iron & Railroad Co. These four are Steel Corp. stacks. Independent steel company stacks taken off include two of the Jones & Laughlin Steel Corp., one at the Aliquippa plant and one at the Eliza plant, one Madeline stack at the Inland Steel Co. in northwestern Indiana, and two stacks at the Hubbard plant of the Youngstown Sheet & Tube Co. in the Mahoning Valley.

In addition to these, two Steel Corp. stacks and one independent steel company stack were banked during July for periods ranging from four to 27 days, but were active both on July 1 and on Aug. 1.

It is reported that the old Dover furnace, owned by the Valley Furnace Co. and formerly operated by the M. A. Hanna Co., Cleveland, is taken off the records, as there is no intention to operate it again at any time. This brings the total possibly usable furnaces down to 308. There are about 10 more which probably should be removed from the list, as being no longer fit for service.

Production of Steel Companies for Own Use—Gross Tons

	Total Pig Iron Spiegel and Ferromanganese			Ferromanganese*		
	1929	1930	1931	1929	1930	1931
Jan.	2,651,416	2,214,875	1,422,382	28,208	27,260	14,251
Feb.	2,498,901	2,284,234	1,389,304	25,978	21,310	19,480
March	2,959,295	2,600,980	1,676,316	24,978	23,345	27,899
April	2,826,028	2,564,681	1,615,375	22,413	27,777	25,456
May	3,165,404	2,613,628	1,584,511	25,896	30,296	23,959
June	2,999,798	2,304,223	1,302,345	33,363	27,327	11,243
½ year....	17,040,842	14,582,621	8,990,233	160,836	157,325	122,288
July	3,039,370	2,075,414	1,091,853	31,040	17,728	17,776
7 months..	20,080,212	16,658,035	10,082,086	191,876	175,053	140,064
Aug.	3,065,874	2,010,572	.....	28,461	20,909	.....
Sept.	2,862,799	1,870,269	.....	27,505	21,181	.....
Oct.	2,902,960	1,791,421	.....	31,108	24,480	.....
Nov.	2,498,291	1,491,927	.....	31,866	18,619	.....
Dec.	2,112,704	1,269,529	.....	28,564	16,288	.....
Year	33,522,840	25,101,753	.....	339,380	276,530	.....

*Includes output of merchant furnaces.

Demand Shrinks Further Below Output

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

STEEL ingot production declined quite sharply in June. Contrary to developments in May, however, our "composite demand line" fell more sharply than the production curve. This unquestionably increased the maladjustment between production and current consumption, and strengthens the conclusion that, somewhere, stocks of steel, either raw or finished, have been accumulating.

Our composite demand line—which includes miscellaneous manufactures, and thus covers at least partly the requirements of miscellaneous industries so frequently referred to of late—fell to a new low level for the current recession, and was only a little more than 1 per cent above the 1921 low.

Declines in all the main items occurred in June. Railroad freight tonnage, construction contracts and mining and oil activity reached new lows. Automobile production was off more than seasonally and nearly back to the January level. General manufacturing showed the first reaction this year, and machine tool orders (adjusted) fell sharply to the lowest level since February, very far below a year ago.

Farm purchasing power was on the downgrade again, largely as a result of lower prices. Exports of iron and steel were lower than in 1921 and, indeed, the lowest since pre-war. The barometer makes no direct measurements of line pipe or public works, but it is clear enough that current requirements among the chief domestic consumers and the export demand were sharply reduced, and below their average relationship with current production.

In Specific Industries

Large yields of many farm products will doubtless help railroad traffic this autumn, but the outlook for steel buying on the part of the carriers is by no means bright. Occasional little spurts of equipment buying are to be expected, but no sustained volume. The underlying fact is the unprofitable operation of many large roads. A general rise in railroad rates is out of the question, and any relief through a partial advance in rates will not only be delayed some months but will probably be

a minor factor. Surplus of freight cars is large—about 100,000 above a year ago. Releases on rail contracts are backward and likely to continue so.

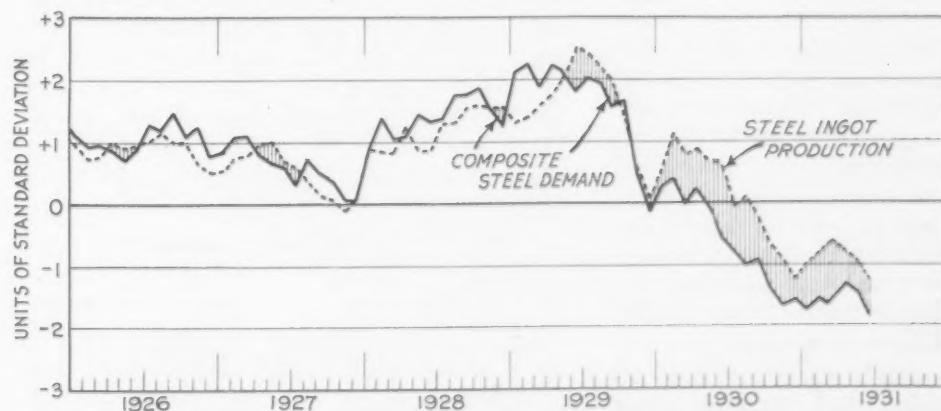
Building activity of various sorts promises a fairly steady volume, but at a very low level. Contemplated new construction pointed upward in June, but was not far from bottom levels. Little speculative or industrial building is in early prospect, and the need of economy in government is limiting public works. July has probably been worse than June, and August promises to be below July. June contracts for floor space were the lowest since early 1921.

Some automobile companies have been doing fairly well, and General Motors June sales to users were 6 per cent above a year ago. Total demand for automobiles, however, is so low that the industry as a whole must be called "poor," and improvement in the remainder of 1931 is doubtful. June and July production schedules have been off more than seasonally. June registrations were about 23 per cent below June, 1930.

It continues true that low prices and low earnings in the oil and mining industries are bringing both curtailment and reduced buying power. Large and cheaply produced crops will help the steel business a little, directly and indirectly, but farm debts (with much delinquency in interest and taxes) are large, and the purchasing power of the average farmer very low. Exports of iron and steel are extremely low and the outlook poor.

Miscellaneous general manufacturing industries have made the best showing, our index being relatively well sustained at a level close to that of a year ago. But even here there was a suspicious reaction in June. Falling machine tool orders, a sluggish demand for all kinds of bars and spotty buying of wire, all indicate the unsatisfactory position.

Thus the probability seems to be that both the demand for steel and ingot output will continue to recede through August, with prospects of a more-than-seasonal recovery thereafter rather slim.



The Iron Age, August 6, 1931—395

FURTHER divergence between supply and demand is not a hopeful sign. It may be that a balance between them will be struck in the autumn. Until that comes we cannot look for sustained improvement in business.

Wages and Dividends

ONE of the liveliest topics of discussion lately has been the relationship between wages and dividends. In the old days the employer's principle, rarely criticized, was to buy help in the cheapest market, paying only what was necessary. The small employer, whether from friendship or a sense of responsibility or a combination of the two, was perhaps less disposed to cut wages than the large employer. Now, under the influence of the wage purchasing power idea, it is the other way about. As to dividends, common stocks used to be regarded as precarious investments. A dividend came when the going was good, but it did not otherwise. Now it is different and there is an almost daily computing of the yield of common shares.

Large enterprises did not usually have cash reserves, but instead were large borrowers. Then the practice arose, when common stocks were still uncertain and unpopular, of large corporations carrying big cash reserves. In view of the circumstances then existing, it is quite certain they were not set up for the purpose of maintaining common dividends; there was concern over bond interest, as foreclosure was to be insured against. Hardly so much thought was given even to preferred dividends, which were usually made cumulative, the dividend not earned to be paid out of future, not past, earnings.

There is very good ethical ground for asserting that the capitalists should in a time of depression contribute more than the salary or wage earner, but there is a very awkward circumstance in applying this philosophy. The typical large corporation has three classes of capital obligations, bonds, preferred shares and common shares, and on a general average it is the rich who have the bonds and preferred shares, leaving the common shares widely distributed.

Much of the talk about cutting common dividends and cutting wages has referred to the United States Steel Corporation, which to only a very small extent conforms to the typical alinement just spoken of. At Dec. 31, 1928, the corporation had about \$456,000,000 bonds outstanding while at the beginning of this year it had \$101,000,000, and furthermore there are only 41½ per cent as many preferred shares as common shares. The corporation moreover has made a sharp distinction, very fair and logical, between salaries and wages, the former representing continuous employment and the latter now representing part-time employment by reason of the stagger system. Consideration is of earnings, not of rates of pay.

Claims that a steel company expects a long depression, without material improvement, when it cuts a dividend sharply, cannot be sustained in the light of steel history, for in all cases earnings have been slow

to increase after business began reviving. It is adequate to mention one case, that the Steel Corporation's earnings in January, 1922, were smaller than in any month of the preceding year, whereas ingot production of the industry was 16 per cent above the average rate of 1921 and 98 per cent above the year's low month.

Midsummer Pig Iron Statistics

DIVERGENCES between the respective rates of pig iron and steel ingot production have been observable in the long decline from the first half of 1929. Diagrams have been given monthly in THE IRON AGE; the issue of July 9 showed both pig iron and ingots through the first half of this year. In the second half of 1929 pig iron did not decrease so much as ingots, and apparently there was an accumulation of pig iron, as frequently occurs with sharply declining activity. In the first half of this year the rise was less marked in pig iron than in steel.

Some such divergences might possibly occur through the demands of the iron and steel foundries running differently from the demands for steel ingot making; though as a matter of fact one hardly expects demand for castings to decrease less, in a depression, than demand for rolled steel.

While total production of pig iron, outside of the small quantity of charcoal iron, is reported monthly by THE IRON AGE, the more detailed figures gathered semi-annually by the American Iron and Steel Institute are awaited to show the distribution by grades. It is now found that there have been only very minor changes in the proportions of the grades, the apparent divergences between pig iron and steel being seen to be real.

Total production of pig iron and ferroalloys in the first half of this year was 11,433,777 tons, making the smallest half-year since 1921, when both halves were much smaller, and 47.5 per cent under the first half of 1929, the record high. The subjoined figures show the divergences between rates of pig iron and steel ingot production respectively. Total production of pig iron and ferroalloys is given, with the percentage such production bears to production of all classes of ingots.

Pig Iron Production

	Pig Iron, Gross Tons	Per Cent to Ingots
First half, 1929.....	21,820,060	74.4
Second half, 1929.....	20,793,923	81.5
First half, 1930.....	18,470,610	77.7
Second half, 1930.....	13,281,559	83.9
First half, 1931.....	11,433,777	74.3

Evidently there was an accumulation of pig iron at

steel works at the close of 1929, liquidated by the bulge in steel-making requirements in early 1930. Then, with steel demand declining at an unexpectedly great rate late in 1930, pig iron again accumulated, and perhaps in the 1931 half-year as a whole there has been a little liquidation.

Managers have had a difficult problem—how to avoid making pig iron or what to do with it when made. By-product coke ovens can be gaited, but they must be kept producing unless the expense is to be borne of heating them artificially or rebuilding them later.

It is on account of these conditions that pig iron was used for steel making and scrap was allowed to decline to prices which in some cases did not cover the cost of gathering and transportation, for scrap has been distinctly below the integrated cost of making pig iron.

At furnace and steel plants things are now being watched very closely, no more iron being allowed to accumulate. It is a common thing to shut off the blast for a few hours on week days and during all or nearly all of the Sunday suspension in steel making. Modern furnaces, large and with wide hearths, behave all right with such treatment, inadmissible in the old days.

▲ ▲ ▲

Inculcating Sense of Proprietorship

NOT so many years ago a man with modest capital could launch a manufacturing venture with some assurance that it would not be dwarfed by industrial giants on all sides. Investment of his funds and the free hand which goes with management of one's own enterprise made for full use of initiative and managerial ability. Success was more or less in proportion to the amount of energy expended.

Of recent years the man of outstanding business ability, but small financial resources, finds about the time he considers, with trepidation, the risks he must incur by setting up his own establishment, that the industrial giant beckons to him with a tempting offer. It is small wonder that many choose the substantial salary as an executive in the large company rather than risk modest financial resources in businesses of their own.

However, in the course of doing this, something vital sometimes is lost—the incentive which arises from individual proprietorship. It is not hard to understand why the man who will put his last ounce of energy and ability into the company in which he is the major stockholder and general manager will not always do the same thing for a company of which he is a salaried employee. The feeling of proprietorship is lacking.

It is the filling in of that gap, the setting up of a condition closely akin to that of proprietorship, which has been largely responsible for the introduction of incentive systems. It is this purpose which twice led General Motors Corporation to organize an investment company for its major executives.

Whether incentives in one form or another actually bridge the gap is still questionable, but they have gone a long way toward rekindling a feeling of proprietorship on the part of the individual employee.

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Foreign Loans

THE London conference ended with as much accomplishment as was reasonably to be expected. The Germans went home, however, in disappointment over the absence of promises of new loans. Any expectation of that nature revealed a naïveté. No government has in itself any money or credit to loan. It is the people who do the loaning, either via their government or via their bankers. In so far as the American people are concerned it can be only in the latter way except by delayed and debated formalities.

The bankers may underwrite a loan, making temporary use of their credit, but in the end they have to distribute it, or float it, among investors, i. e., the part of the public possessing a surplus which they would like to put in the way of earning a wage, while preserving the safety of the principal.

Now, American investors have had sad experiences with foreign loans. Irrespective of the economic merits of the inter-governmental war debts, the fact remains that there has had to be much negotiation in respect to them and the lesson is learned that while you may lend a sum of money the borrower may later object to repayment of it, or may allege that he can't. Then we have had the lesson of lending great sums of money to a Russian government and beholding a revolution and the advent of a new government which says that it will not pay, repudiating the obligation of its predecessor.

So the Bruening government of Germany, seeking a loan to avert an overthrow by fascists or communists, either of whom might have declared that they neither could nor would pay, was not in a good position to negotiate with bankers who would have to go to investors who would laugh at them, while holding tight to their pocket-books.

The German people should not therefore blame Dr. Bruening but rather themselves, or those parts of themselves that listen to Mr. Hitler on the one hand and Mr. Hugenberg on the other. A Germany in danger of communistic or monarchical revolution is not good security in the eyes of British and American investors. Friendly procrastination to give the Reich a chance to stabilize itself seems therefore to be the outcome of the London conference.

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THAT within a few years at least 30 to 35 per cent of all the steel produced in Germany will carry a small percentage of copper is the interesting statement made recently before a group of German metallurgists. Copper producers may perhaps take some consolation from the prophecy.

CORRESPONDENCE

How About Wage Cutting Among Public Officials?

To the Editor: Being merely an advertising man, my thoughts on the subject of "wage cutting" are undoubtedly valueless. Nevertheless, the spectacle of many individual manufacturers frantically striving to save a cent or two an hour from the pay of their particular few dozen or hundred employees is funny to a person with a rather ironic sense of humor.

If this country could not survive "half slave and half free" neither can it survive "half well paid and half underpaid." The place to start wage reduction is with the President of the United States, judges, congressmen, school teachers, firemen, policemen, public officeholders of all sorts; then if need be deduct from the lower paid workers.

The businessman and not the ostrich should be typified as burying his head in the sand. How business expects to set things right by wage reductions without including tax eaters in the reduction program is beyond me.

J. CARLETON ESTY,

Clifton, N. J.

Steel in the Private Residence

(Concluded from Page 373)

unbound by tradition, and worked into them the result of his early struggles, his patient climb, and his triumphant success in ornamental iron work.

The Naugle house was built in 1907 for employees of the Tuxedo Park Association. The studs of walls and partitions, and floors and roof, were "metal lumber." Ferro-lithic plates, the first steel-plate floors, were used on the steel joints. Metal lath was the base for plaster on the inside and for stucco on the exterior. The only combustible material used was wood trim.

The Suspension Steel Construction Co. built a house at Glencoe, Ill., using pipe for the structural supports, as shown in Fig. 3. Wires were stretched between the pipes, and metal lath was used over the floor wires for the floor and under the floor wires for the ceiling. Metal lath was placed outside and inside of the stretched wires for the walls. The construction was simple and proved durable. Thirty-five buildings were erected this way.

C. H. Dexheimer & Sons, Toledo, built a number of houses following the Naugle method. The walls were of 4-in. channel studs, 24 in. on centers, covered with 3½-lb. rib lath. The floors were 2-in. concrete placed on 4-lb. lath.

A new method was used by J. C. Broderick in a widely advertised house built in Tarrytown, N. Y., in 1926. Standard units were made from light angles and bolted together at the building site to form a steel frame, as shown in Fig. 4.

The Jones & Laughlin Steel Corp. built a bungalow at Woodlawn, Pa., in April, 1926, using 6-in. Junior beams for floors and for the exterior frame, and pressed steel studs for partitions. Paper-backed wire reinforcing material was used on the floor joists

for a 2-in. concrete slab with 1-in. by 2-in. nailing strips on which to fasten the wood wearing surface. The same reinforcing material was used on the outside for Portland cement stucco, and the interior was a gypsum board fastened to the steel studs to form a plaster base.

National Bridge Works used J. & L. Junior beams for the floors and roof of a brick house in Great Neck, N. Y., in the fall of 1926. Plasterboard was used on the steel joists as a permanent form for the 2-in. reinforced gypsum slab cast in place. The roof was of reinforced gypsum blocks on J. & L. Junior beams.

In 1927 a complete steel frame house of J. & L. Junior beams was built in Jamaica, N. Y., using paper-backed reinforcement for the 2-in. floor slab and for plastering.

(To be continued)

Most Out of Die Castings

(Concluded from Page 377)

Gear A is the driver and gear B is driven through stepped intermediate C and D. Gear A has an even number of teeth. Gears C and D have an odd number of teeth. Gears E and F have an even number of teeth and B has an odd number of teeth.

It can be readily seen that there are hundreds of ways in which this train of gears can be assembled before the right way would be found, and considerable time would be lost in assembling this gear unit, without the teeth markings. If these were cut gears, they would have to be carefully marked in a fixture to indicate teeth relation between gears C-E and F-D. On a die casting, once the relation is established, it will always stay the same and once the indication points are fixed on a die casting, they will always stay the same.

Fig. 11 illustrates a peculiar gear combination. This gear was never made and is merely shown as an example of a possible die casting application. It would be considered practically impossible to machine a piece of this sort, and assuming that a piece like this were required, it would be necessary to make it from a number of pieces, and then the assembly of these pieces would present quite a problem. From a die casting standpoint, this presents both a practical and feasible die casting possibility.

Note the external gear teeth J-N, which are shrouded at point A to secure strength and at the same time to provide an effective guard. The teeth N terminate at T to a cam effect. At K internal teeth are cast sharp against the web of the gear and these are interrupted at B. A cam is shown at R, which is cut through the web, and S represents a raised lug. A spline is cast at M but this spline does not go all the way through the hub but terminates at C. This would be extremely difficult to machine. Odd-shaped external teeth indicated by Q and O are cast on the hub portion and these teeth terminate sharply at P. All in all, this is an unusual piece, and truly would represent part of a very peculiar mechanism, if any. At the same time it serves to illustrate a case of getting the most out of die castings.



Pig Iron Production Lowest Since November, 1921

▲ ▲ ▲
JULY Output Is 47,201 Tons
a Day — Ingot Average
Back on 30 Per Cent Basis—
Detroit Steel Bar Base Is With-
drawn
▼ ▼ ▼

A DECLINE in pig iron production to the lowest ebb since 1921, following the disappointing revelations of iron and steel company reports for the second quarter, has dampened reviving hopes for business betterment and accentuated concern over negative market factors in general.

With half of the country's automobile capacity idle, with the Ensley and Pittsburgh rail mills shut down and with virtually no branch of the steel industry showing any improvement aside from temporary fluctuations characteristic of a low rate of activity, the outlook for August can hardly be called encouraging. There is the further fact that the rise in steel ingot production of a week ago proved abortive. With declines reported at Youngstown, Cleveland, Pittsburgh and Buffalo, the average for the country has receded from 32 to 30 per cent of capacity.

WHILE too much significance may be attached to the change in operating rate, in view of increasingly frequent irregularities in steel-making schedules in keeping with variations in mill requirements, the industry is not only resigned to another exceedingly dull month but is even more reluctant than heretofore to estimate the scope of seasonal improvement in September. The only favorable development is a firmer attitude on prices, which is a natural reaction from the poor quarterly earnings statements.

PIG iron production in July was 1,463,220 tons, or 47,201 tons a day, compared with 1,638,627 tons, or 54,621 tons, in June. Both total output and daily average were the lowest for any month since November, 1921. The daily rate compares with 53,732 tons for last December, the previous low for this depression. Output for the first seven months of the year, at 12,568,593 tons, is the smallest January-July total since 1921, when 10,292,721 tons was produced.

Twelve furnaces were blown out in July and three were lighted, making a net loss of nine. The 82 stacks in blast on Aug. 1 are estimated to have been making iron at a daily rate of 45,230 tons. Only 12 of the 55 furnaces in the Pittsburgh district are now active and production is considerably below current steel-making requirements, the difference being made up by the use of cold iron, thus reducing surplus stocks.

THE leading price development of the week is the withdrawal of the Detroit basing point on bars, which was announced a few weeks ago. Aside from indicating a stronger position on the part of producers, this action also is the outcome of dissatisfaction over inequalities in delivered quotations among Michigan consumers who had formerly held a position of virtual parity in their bar costs.

The strip steel market is practically free from shading for the first time in months, and sheet prices are being maintained on such business as is now coming out. New sheet bookings, however, are light, since consumers took rather heavy shipments at the old prices during July. A local development is the abandonment of a Cleveland base on plates and the establishment of a single Cleveland price of 1.65c. on bars for both city and outside deliveries. Price irregularities are apparently confined to concessions on reinforcing bars at Cleveland and Detroit and cuts by foreign mills on reinforcing bars, merchant bars, wire products and light shapes on the Pacific Coast.

SCRAP markets are lethargic and show mixed trends. Heavy melting steel has advanced 25c. a ton at Detroit, but declines in various grades are reported at St. Louis and the tone of the Pittsburgh market has weakened.

Automobile production in July is estimated at 200,000 cars and this month will probably shrink to about 160,000 assemblies. The Ford shutdown does not affect branch assembly plants, which are expected to turn out 100,000 cars in the next 60 days. At least a mild recovery in the activity of the motor car industry is looked for in September.

Fabricated structural steel awards, at 14,500 tons, are the smallest since the end of April. New projects, at 32,500 tons, compare with 55,000 tons reported a week ago.

Machinery exports in June rose to \$28,303,708 from a total of \$26,620,583 in May.

THE IRON AGE composite prices are unchanged, finished steel at 2.116c. a lb., pig iron at \$15.54 a ton and scrap at \$9.42 a ton. Finished steel is \$1.10 a ton lower than a year ago, pig iron is off \$1.42 and scrap is \$3.66 lower.

PITTSBURGH

Steel Price Stabilization Center of Interest in Dull Market

▲ ▲ ▲

Steel production declines further in exceedingly dull market. Ingot rate 28 per cent.

* * *

Blast furnace output in district is lowest in many years.

* * *

Attention of trade centered on price stabilization. Detroit base on bars withdrawn.

* * *

Scrap market shows mixed trends, but prices are fairly steady.

▼ ▼ ▼

PITTSBURGH, Aug. 4.—With the depleted earning power of the larger steel companies in this and nearby districts clearly revealed by last week's quarterly reports, the industry is centering its attention on efforts to stabilize prices. The Detroit basing point on bars, which was announced a few weeks ago, has been withdrawn in an effort to clarify the price structure, permitting Pittsburgh mills to get into that important consuming territory without sharp freight rate equalization. The 1.60c., Pittsburgh, quotation on all three of the heavy hot-rolled products is gaining more stability in other consuming districts. The new schedules on sheet steel are also reported to be firmly maintained on such new business as is coming out and the strip steel market is practically free from shading for the first time in many months.

Current specifications for finished steel products as a whole still continue downward, but the movement is hardly perceptible. Only on sheets and tin plate are releases noticeably lighter, and the falling off in tin plate demand is not as pronounced as it was two or three weeks ago. On sheets, a downward tendency in demand was expected, following the comparatively heavy specifications against old low-priced contracts which were received and shipped against during July. Movement of structural steel and reinforcing bars is steady and line pipe orders are sufficient to keep electric weld and seamless units in this district and the Valleys occupied fairly well during August.

Production of both pig iron and raw steel has again been forced downward and is apparently somewhat under the current requirements of finishing mills. Three blast furnaces in the Pittsburgh district have been banked in the last week and another at Johnstown has been blown out. Only 12 of the 55 furnaces in the Pittsburgh district are now making iron, six being Steel Corporation stacks and six belonging to the independents. This is the lowest rate in many years and is considerably below the current requirements of steel-making departments. The difference is being made up by the use of cold iron, thus reducing the surplus stocks of this commodity.

Steel ingot production has fallen to 28 per cent of capacity, a decline of two points from the rate which prevailed in the last half of July. One large plant, however, which has been inactive for several days is expected

to resume operations before the middle of the month. The rate is unchanged in the Wheeling district, but curtailment of open-hearth output is in prospect there within the next week or two. Production in the Valleys, which averaged nearly 40 per cent last week, declined to 30 per cent in the first half of the present week, but is scheduled to rise again in a day or two, making the average for the week in that district about 35 per cent.

The raw material markets are quiet, with scrap prices showing rather mixed trends. A slight easing off in quotations seems to be in prospect. Pig iron is very dull, but a few scattered inquiries for small lots are before the trade.

SEMI-FINISHED STEEL

This month's shipments are lighter than they were at the beginning of July, when the requirements of non-integrated makers of sheets, strips and tin plate were higher. No new buying is reported and the market on billets, slabs and sheet bars is nominal at \$29 to \$30 a ton, Pittsburgh or Youngstown. Forging billets are quiet and unchanged at \$35 to \$36, Pittsburgh, while wire rods are well held at \$35, Pittsburgh or Cleveland.

PIG IRON

This market shows no change in the past week, although some sellers report what appears to be a slight increase in interest on the part of consumers. The Elliott Co., Jeannette, Pa., is in the market for 150 tons of three grades of iron and the Pressed Steel Car Co. has not yet closed against its recent inquiry for 100 tons of carwheel iron. No other inquiry is reported and shipments against contracts are very light.

Prices quoted below are still representative of the market.

Prices per gross ton, f.o.b. Valley furnace:	
Basic	\$15.50 to \$16.00
Bessemer	17.00
Gray forge	16.50
No. 2 foundry	17.00
No. 3 foundry	16.50
Malleable	17.00
Low phos., copper free	26.66 to 27.00

Freight rate to Pittsburgh or Cleveland district, \$1.76.

Prices per gross ton, f.o.b. Pittsburgh district furnace:

Basic	\$16.00 to \$16.50
No. 2 foundry	17.50
No. 3 foundry	17.00
Malleable	17.50
Bessemer	17.50

Freight rates to points in Pittsburgh district range from 63c. to \$1.13.

RAILS AND TRACK SUPPLIES

Releases for rails and accessories from the carriers are practically negligible. The local rail mill is not operating for the second week, and there is no promise of a resumption of activity next week. Production of track supplies is also very light. Mills expect little or no new buying from the railroads until the results of their plea for higher rates are made known in the fall. Releases on old contracts are also expected to be held up by some of the carriers.

BOLTS, NUTS AND RIVETS

Current demand is at the lowest point of the year, and August is expected to continue dull. Price shading of bolts and nuts is still reported, but most of the larger interests are adhering to the quoted schedules of 73 and 10 per cent off list. Large rivets are well maintained at \$2.75 a 100 lb., Pittsburgh.

BARS, PLATES AND SHAPES

Prices have been further clarified by the withdrawal of the Detroit base on bars, which was partially established a few weeks ago. A Cleveland base of 1.65c., or \$1 a ton over the Pittsburgh price, will still be maintained, and the Detroit market will be based on this figure plus the freight from Cleveland to Detroit of approximately \$4 a ton. This will make the present Detroit price 1.85c., and attempts are being made to establish this figure. The Cleveland base on plates will also be abolished, with plates and shapes continuing at 1.60c., Pittsburgh. Generally speaking, prices are much better maintained than they were a month or two ago, but current tonnage does not offer much of a test.

Demand for heavy hot-rolled products shows little change. Large proj-

A Comparison of Prices

Market Prices at Date, and One Week, One Month and One Year Previous,
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron, Per Gross Ton:	Aug. 4, 1931	July 28, 1931	July 7, 1931	Aug. 5, 1930
No. 2 fdy., Philadelphia.....	\$17.01	\$17.01	\$17.01	\$19.76
No. 2, Valley furnace.....	17.00	17.00	17.00	18.00
No. 2 Southern, Cin'tl.....	14.69	14.69	14.69	16.19
No. 2, Birmingham.....	12.00	12.00	12.00	14.00
No. 2 foundry, Chicago*.....	17.50	17.50	17.50	17.50
Basic, del'd eastern Pa.....	16.75	16.75	16.75	18.75
Basic, Valley furnace.....	15.50	15.50	15.50	18.00
Valley Bessemer, del'd P'gh.....	18.76	18.76	18.76	20.26
Malleable, Chicago*.....	17.50	17.50	17.50	17.50
Malleable, Valley.....	17.00	17.00	17.00	18.50
L. S. charcoal, Chicago.....	25.04	25.04	25.04	27.04
Ferromanganese, seab'd ear- lots.....	†\$5.00	†\$5.00	†\$5.00	94.00

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Ferromanganese quotations adjusted to carload unit; larger quantities at discounts.

Rails, Billets, etc.,

Per Gross Ton:

	Aug. 4, 1931	July 28, 1931	July 7, 1931	Aug. 5, 1930
Rails, heavy, at mill.....	\$43.00	\$43.00	\$43.00	\$43.00
Light rails, at mill.....	34.00	34.00	34.00	36.00
Re-rolling billets, Pittsburgh.....	29.00	29.00	29.00	31.00
Sheet bars, Pittsburgh.....	29.00	29.00	29.00	31.00
Slabs, Pittsburgh.....	29.00	29.00	29.00	31.00
Forging billets, Pittsburgh.....	35.00	35.00	35.00	36.00
Wire rods, Pittsburgh.....	35.00	35.00	35.00	36.00
Skelp, grvd. steel, P'gh, lb..	1.60	1.60	1.65	1.70

Finished Steel,

Per Lb. to Large Buyers:

	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.60	1.60	1.65	1.65
Bars, Chicago.....	1.70	1.70	1.70	1.75
Bars, Cleveland.....	1.65	1.65	1.65	1.75
Bars, New York.....	1.93	1.93	1.98	1.98
Tank plates, Pittsburgh.....	1.60	1.60	1.65	1.65
Tank plates, Chicago.....	1.70	1.70	1.70	1.75
Tank plates, New York.....	1.88	1.88	1.93	1.88
Structural shapes, Pittsburgh.....	1.60	1.60	1.65	1.65
Structural shapes, Chicago.....	1.70	1.70	1.70	1.75
Structural shapes, New York.....	1.85 1/2	1.85 1/2	1.90 1/2	1.85 1/2
Cold-finished bars, Pittsburgh.....	2.10	2.10	2.10	2.10
Hot-rolled strips, Pittsburgh.....	1.55	1.55	1.55	1.65
Cold-rolled strips, Pittsburgh.....	2.15	2.15	2.15	2.35

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Finished Steel,

Per Lb. to Large Buyers:

	Aug. 4, 1931	July 28, 1931	July 7, 1931	Aug. 5, 1930
Hot-rolled annealed sheets.....	2.40	2.40	2.40	2.45
No. 24, Pittsburgh.....	2.40	2.40	2.40	2.45
Hot-rolled annealed sheets.....	2.50	2.50	2.50	2.60
No. 24, Chicago dist. mill.....	2.90	2.90	2.90	3.10
Sheets, galv., No. 24, P'gh.....	3.00	3.00	3.00	3.20
Hot-rolled sheets, No. 10, P'gh.....	1.70	1.70	1.70	1.70
Hot-rolled sheets, No. 10, Chi- cago dist. mill.....	1.80	1.80	1.80	1.80
Wire nails, Pittsburgh.....	1.80	1.80	1.80	2.05
Wire nails, Chicago dist. mill.....	1.85	1.85	1.85	2.10
Plain wire, Pittsburgh.....	2.20	2.20	2.20	2.30
Plain wire, Chicago dist. mill.....	2.25	2.25	2.25	2.35
Barbed wire, galv., P'gh.....	2.55	2.55	2.55	2.80
Barbed wire, galv., Chicago dist. mill.....	2.60	2.60	2.60	2.85
Tin plate, 100 lb. box, P'gh.....	\$5.00	\$5.00	\$5.00	\$5.25

Old Material, Per Gross Ton:

Heavy melting steel, P'gh.....	\$10.75	\$10.75	\$10.25	\$14.75
Heavy melting steel, Phila.....	8.75	8.75	8.50	12.50
Heavy melting steel, Ch'go.....	8.75	8.75	8.75	12.00
Carwheels, Chicago.....	10.00	10.00	10.00	13.50
Carwheels, Philadelphia.....	12.00	12.00	12.00	14.50
No. 1 cast, Pittsburgh.....	11.00	11.00	10.50	13.50
No. 1 cast, Philadelphia.....	11.50	11.50	11.50	13.00
No. 1 cast, Ch'go (net ton).....	9.00	9.00	9.00	12.00
No. 1 RR. wrot., Phila.....	10.00	10.00	10.00	15.00
No. 1 RR. wrot., Ch'go (net).....	7.00	7.00	7.00	10.00

Coke, Connellsville,

Per Net Ton at Oven:

Furnace coke, prompt.....	\$2.40	\$2.40	\$2.40	\$2.50
Foundry coke, prompt.....	3.50	3.50	3.50	3.50

Metals,

Per Lb. to Large Buyers:

	Cents	Cents	Cents	Cents
Lake copper, New York.....	8.12 1/2	8.12 1/2	9.12 1/2	11.12 1/2
Electrolytic copper, refinery.....	7.50	7.50	8.00	10.75
Tin (Straits), New York.....	24.80	24.25	26.00	30.25
Zinc, East St. Louis.....	3.85	3.87 1/2	3.95	4.50
Zinc, New York.....	4.20	4.22 1/2	4.30	4.85
Lead, St. Louis.....	4.22 1/2	4.22 1/2	4.22 1/2	5.35
Lead, New York.....	4.40	4.40	4.40	5.50
Antimony (Asiatic), N. Y.....	6.65	6.65	7.00	8.25

ects are not numerous. The Pymatuning dam near Jamestown, Pa., on which bids will be taken Aug. 15, will require a large tonnage of reinforcing bars and possibly some steel piling. The American Bridge Co. has been awarded 4300 tons of structural shapes for the South Tenth Street bridge at Pittsburgh, on which it was recently reported to be low bidder. No active barge inquiry is before the trade; most of the larger orders placed earlier in the year are rapidly being brought to completion. Merchant bars going to the automobile industry are particularly dull. The month is expected to be a very low one for alloy steel bars.

TUBULAR GOODS

The pipe market is without feature, particularly insofar as inquiry for gas and oil lines is concerned. Some miscellaneous small projects are being figured by local mills and there is still talk of additional lines for Texas, which seem to be in the formative state just now. Present orders assure a fair operating rate for electric weld and seamless units for the

remainder of the month, but not much is in sight for September. Demand for lapweld pipe is negligible and butt-weld material is moving very slowly. Developments in the oil country are not particularly favorable for casing, and shipments during July fell considerably under those of previous months.

COLD-FINISHED STEEL BARS

No change is reported in this market, with demand from all principal outlets at a minimum level. The price on bars is well maintained at 2.10c., Pittsburgh, while ground shafting is quoted at 2.45c. to 3.40c., according to size.

WIRE PRODUCTS

August promises to be a very dull month for wire makers, although movement of fencing to the South and West is expected to show some improvement in the next few weeks. Manufacturing consumers are buying only for their immediate light requirements, and specifications against contracts are very conservative. Little test of prices is being offered, as job-

bers are well covered on nails and other merchant products for the remainder of the month. On current small lots, nails are maintained at \$1.90 a keg to jobbers and \$2 to the trade. Manufacturers' wire is unchanged at 2.20c., Pittsburgh.

SHEETS

Some shipments against old low-priced contracts are still being made, but sheet makers expect to have this tonnage entirely cleaned up by the end of the week. Consumers are not yet specifying against new contracts based on the new price schedules and most of them are fairly well supplied with their needs over the next few weeks. As a result, current tonnage is very light and operations are somewhat lower at about 35 per cent of capacity for the industry as a whole.

The new price schedules are still being well maintained on such buying as is reported. Many of the larger consumers, particularly in the automobile industry, have not yet made contracts on this basis, but efforts are being made to get them into line before orders for new models come in.

THE IRON AGE COMPOSITE PRICES

Finished Steel		Pig Iron	Steel Scrap
Aug. 4, 1931	2.116c. a Lb.	\$15.54 a Gross Ton	\$9.42 a Gross Ton
One week ago	2.116c.	15.54	9.42
One month ago	2.137c.	15.59	9.17
One year ago	2.171c.	16.96	13.08
Based on steel bars, beams, tank plates, wire, rails, black pipe and sheets. These products make 87 per cent of the United States output.		Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham	
Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.			
HIGH		HIGH	HIGH
1931	2.142c. Jan. 13	\$15.90. Jan. 6	\$11.33. Jan. 6
1930	2.362c. Jan. 7	18.21. Jan. 7	15.00. Feb. 18
1929	2.412c. April 2	18.71. May 14	17.58. Jan. 29
1928	2.391c. Dec. 11	18.59. Nov. 27	16.50. Dec. 31
1927	2.453c. Jan. 4	19.71. Jan. 4	15.25. Jan. 11
1926	2.453c. Jan. 5	21.54. Jan. 5	17.25. Jan. 5
1925	2.560c. Jan. 6	22.50. Jan. 13	20.83. Jan. 13
LOW		LOW	LOW
1931	2.102c. June 2	\$15.54. July 21	\$9.08. June 23
1930	2.121c. Dec. 9	15.90. Dec. 16	11.25. Dec. 9
1929	2.362c. Oct. 29	18.21. Dec. 17	14.08. Dec. 3
1928	2.314c. Jan. 3	17.04. July 24	13.08. July 2
1927	2.293c. Oct. 25	17.54. Nov. 1	13.08. Nov. 22
1926	2.403c. May 18	19.46. July 13	14.00. June 1
1925	2.396c. Aug. 18	18.96. July 7	15.08. May 5

Such orders are negligible at this time, but the body builders and parts makers are making heavy investments in new dies and tools, which indicate a gradually increasing production curve after this month. Withdrawal of the Detroit base on bars, which was established a short time ago, is favorably regarded by sheet makers, who had anticipated similar action on sheets if the bar base became permanent.

TIN PLATE

The decline in tin plate demand and production which began about three weeks ago is gradually becoming less pronounced, and, although operations are again off slightly to scarcely 55 per cent of capacity, no further curtailment is expected in the immediate future. No important news of crops has appeared in the last week, and tin plate makers hope that container manufacturers have completed the necessary readjustments in their schedules.

STRIP STEEL

Demand reflects no further curtailment from July levels, and the low rate of the summer has apparently been reached. Developments in the automobile industry from now on are expected to be in the form of advanced rather than decreased schedules, which will probably be felt by strip makers by the end of the month. Prices seem to be unusually well maintained at 1.55c. and 1.65c., Pittsburgh, on hot-rolled strip and 2.15c. on cold-rolled.

WAREHOUSE BUSINESS

Sales of steel products out of warehouse during July were about equal to those of the previous month with most companies, although some reflected a slight decline. In most cases the decline was in size of orders rather than number. A few warehouses in this district have revised sheet schedules to conform with the recent change in mill practice, but prices are still substantially the same. Lower quotations of 70 and 10 per cent off list are now being offered on

bolts and nuts and the market is weak even at the new levels. Spikes are also lower, but wire products have firmed up, reflecting the efforts of mills to raise their quotations.

COAL AND COKE

The market reflects the usual mid-summer inactivity, with the strike no longer a market factor. Furnace coke is quiet, with prices weak, but the market is still quotable at \$2.40, Connellsville. Foundry coke is also dull, with some distress material offered at low prices. With industrial and railroad demand for coal at a minimum, there is little demand for Lake cargo material. Prices are soft.

OLD MATERIAL

The scrap market has reflected rather mixed trends in the last week, with strength continuing in dealers' buying prices in spite of a tendency on the part of mills to revise down-

ward their ideas of offering figures. A small sale of No. 1 heavy melting steel to a mill in the district at \$10.75 is reported, and other buyers indicate that purchases can be made at as low as \$10.50. On the other hand, dealers are having difficulty in buying against old contracts at \$10.50, and \$11 is still being offered for one nearby shipping point. The first of the smaller railroad lists to be reported this month brought out offers as high as \$11 for heavy melting steel from dealers, with the rails bringing equally high prices. The closing of the larger railroad lists this week will clarify prices somewhat and possibly reveal a slight softening in the market. No changes are reported in the other grades of scrap, with consumer buying negligible. Heavy breakable cast was incorrectly quoted in the price tables last week and should have ranged from \$8 to \$8.50, where it is still maintained.

Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:

Basic Open-Hearth Grades:

No. 1 heavy melting steel...	\$10.50 to \$11.00
No. 2 heavy melting steel...	9.50 to 10.00
Scrap rails	10.50 to 11.00
Compressed sheet steel...	10.25 to 10.75
Bundled sheets, sides and ends	8.50 to 9.00
Cast iron carwheels.....	10.50 to 11.00
Sheet bar crops, ordinary...	11.50 to 12.00
Heavy breakable cast.....	8.00 to 8.50
No. 2 railroad wrought...	10.50 to 11.00
Hvy. steel axle turnings...	9.50 to 10.00
Machine shop turnings...	7.00 to 7.50

Acid Open-Hearth Grades:

Railr. knuckles and couplers	12.75 to 13.25
Railr. coil and leaf springs	12.75 to 13.25
Roller steel wheels.....	12.75 to 13.25
Low phos. billet and bloom ends	14.50 to 15.00
Low phos. mill plates.....	12.50 to 13.00
Low phos. light grades....	12.50 to 13.00
Low phos. sheet bar crops	13.00 to 13.50
Heavy steel axle turnings...	9.50 to 10.00

Electric Furnace Grades:

Low phos. punchings....	13.50 to 14.00
Heavy steel axle turnings...	9.50 to 10.00

Blast Furnace Grades:

Short shoveling steel turnings	7.75 to 8.25
Short mixed borings and turnings	7.75 to 8.25
Cast iron borings	7.75 to 8.25

Rolling Mill Grades:

Steel car axles	16.50 to 17.50
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Cupola Grades:

No. 1 cast.....	10.50 to 11.50
Rails 3 ft. and under....	12.50 to 13.00

Warehouse Prices, f.o.b. Pittsburgh

	*Base per Lb.
Plates	2.85c.
Structural shapes.....	2.85c.
Soft steel bars and small shapes...	2.60c.
Reinforcing steel bars.....	2.60c.
Cold-finished and screw stock—	
Rounds and hexagons.....	3.10c.
Squares and flats.....	3.60c.
Bands	2.95c.
Hoops	3.95c.
Hot-rolled annealed sheets (No. 24), 25 or more bundles.....	3.05c.
Galv. sheets (No. 24), 25 or more bundles	3.40c.
Hot-rolled sheets (No. 10).....	3.15c.
Galv. corrug. sheets (No. 28), per square (less than 3750 lb.).....	3.74c.
Spikes, large	2.50c.
Small	2.75c. to 2.90c.
Boat	3.00c.
Track bolts, all sizes, per 100 count, 70 and 10 per cent off list	
Machine bolts, 100 count, 70 and 10 per cent off list	
Carriage bolts, 100 count, 70 and 10 per cent off list	
Nuts, all styles, 100 count, 70 and 10 per cent off list	
Large rivets, base per 100 lb.	\$3.20
Wire, black, soft ann'd, base per 100 lb.	2.30
Wire, galv. soft, base per 100 lb.	2.75
Common wire nails, per keg.....	2.05
Cement coated nails, per keg.....	2.05

*On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 999 lb.

CHICAGO

Steel Market Still Without a Definite Trend

CHICAGO, Aug. 4.—Demand for iron and steel products varies from day to day, with the average near the level that has prevailed during the last month. The slight increase in specifications recently noticed has failed to hold, and new sales are widely scattered and do not give so much as a hint of improved consumption.

Ingot output still stands at 30 per cent and the number of steel mill furnaces in blast remains at nine of 36 in the district.

Sales of farm implements from warehouses constitute a bright spot in this market. It is understood that some stocks already have been reduced below normal for this time of year and that manufacturing operations have been purposely held back to place the industry on a better footing, with the hope that employment can be enlarged late in the fall and extended through the winter months. A few bolt and nut releases by farm equipment builders indicate that assembly operations have gathered some momentum.

Increasing activity in pig iron sales reported recently at Cleveland has now spread to this district, where consumer interest is gaining headway.

Interest is running high over bids that soon are to be opened on the Chicago Post Office. This project will take about 45,000 tons of structural shapes and 2500 tons of reinforcing bars. On the whole, the construction industry is slack. Most Chicago shops are urgently in need of work and it is very noticeable that they are reaching farther afield in an effort to hold present schedules. Preparations are being made to readvertise those projects that were affected by the new Illinois wage law.

PIG IRON

Shipments of Northern foundry iron are slightly better, though individual releases are still small. On the other hand, interest in purchases, some of which are quite large in view of the market during the past few months, is growing. Stocks in the hands of producers are heavy, and furnace operations, already at low capacity, are being scaled even closer to the shipping rate. Southern iron appears to be steady at \$11, Birmingham, in a market where sales are limited to one and two carlots. The charcoal iron market is dull. Producers have ample stocks. Only one furnace is in blast. Activity in silvery iron is limited to material salvaged from a boatload that recently

Orders for steel average about the same as during past month.

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Larger shipments of farm equipment from warehouse stocks brightest spot in outlook.

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Bids soon to be opened on Chicago Post Office, requiring 45,000 tons of structurals and 2500 tons of bars.

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Pig iron shipments gain slightly and interest in new purchases is increasing.

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Scrap market merely holding its own.

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grounded. This material, which is said to have become mixed when salvaged, is being offered well below market quotations.

Prices per gross ton at Chicago:

N'th'n No. 2 fdy., sil. 1.75 to 2.25	\$17.50
N'th'n No. 1 fdy., sil. 2.25 to 2.75	18.00
Malleable, not over 2.25 sil.	17.50
High phosphorus	17.50
Lake Super. charcoal, sil. 1.50	\$25.04 to 27.04
S'th'n No. 2 fdy.	17.01
Low phos., sil. 1 to 2, cop-per free	28.50 to 29.20
Silvery, sil. 8 per cent.	24.79 to 26.09
Less ferrosilicon, 14-15 per cent	35.79

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnaces, not including an average switching charge of 61c. per gross ton.

FERROALLOYS

Shipments are very light. Purchases are at the low point of the year.

COKE

The movement of by-product foundry coke is sluggish. Spot sales are at a standstill. Prices are unchanged at \$7.50 a ton, local ovens.

WAREHOUSE BUSINESS

Orders from warehouses declined sharply during the final days of July. August thus far has brought no change.

COLD-ROLLED STRIP

Use of this commodity remains very light. Output for the country as a whole cannot be measured above 18 per cent of capacity. Prices are hold-

ing, but current small orders scarcely afford a real test of prices.

HOT-ROLLED STRIP

Output is at about 30 per cent of capacity. New buying is light, and specifications are scattered and of small size.

WIRE PRODUCTS

There is virtually no change either in the market or in conditions that can usually be counted on to bring about a change in the market. Producers are marking time, with output in the range from 25 to 30 per cent of capacity, which is close to actual consumption. Mill stocks have not been expanded to normal for this time of year. The grain crop in the Central West is satisfactory, but drought in Western Canada and Wisconsin is cutting the yield in those sections, while grasshoppers have seriously affected crops in the Dakotas and in Minnesota. Michigan also reports this pest in a few parts of the State. Demand for nails is very light, and the use of electrical wires is at a low point. Shipments of wire cables are small in the absence of normal demand from the oil industry, building contractors and manufacturers. Prices are steady.

CAST IRON PIPE

Outstanding among awards in a very quiet market were 1100 tons of 6 to 12-in. Class C pipe taken by R. D. Wood & Co. for delivery to Fox Point, Wis., and 125 tons of 18-in. Class A pipe, which James B. Clow & Sons will furnish Neenah, Wis., for a sewage plant. Fox Point is also said to have placed 25 tons of specials and a number of hydrants. Both public and private work is very quiet. There are, however, a fair number of inquiries and carload orders. Foundry output is at about 50 per cent of capacity.

Prices per net ton, deliv'd Chicago: Water pipe, 6-in. and over, \$42 to \$44; 4-in., \$45 to \$47; Class A and gas pipe, \$3 extra.

SHEETS

Output by hot mills is in the range from 35 to 40 per cent of capacity. Both inquiries and new buying are extremely spotty and probably do not reflect actual consumption for the reason that many users took more than actual requirements in July, when they still could send releases against orders at the old quotations. The result of this situation is that there has been some growth of stocks in the hands of a number of consumers and, unless business turns upward, new buying and specifications will

suffer until users' stocks have been thinned out. All old agreements were to have been cancelled July 31, so the sheet market is evidently now well established at the quotations adopted July 1. The Wisconsin State Prison is taking samples for automobile license tags and road signs, which will require 600 tons of sheets.

Base prices per lb., deliv'd from mill in Chicago: No. 24 black sheets, 2.40c. to 2.50c.; No. 24 galv., 2.95c. to 3.05c.; No. 10 blue ann'd, 2.00c. to 2.10c. Deliv'd prices at other Western points are equal to the freight from Gary, plus the mill prices, which are 5c. per 100 lb. lower than Chicago delivered prices.

BOLTS, NUTS AND RIVETS

As viewed by specifications, there is only one bright spot in the market and that is a slight growth in releases from manufacturers of farm equipment. Variations in prices are common even on small lots. Discounts of 75, 10 and 10 are quite frequent on rolled thread machine bolts, while 75 and 10 can be done on this commodity with cut threads.

PLATES

Little change has taken place in this market since last week, when the final shipments of skelp were made against one of the few remaining pipe orders. The immediate future for pipe is somewhat uncertain. One plate mill will be idle this week. New pipe inquiries are scarce. The gas line from Texas to Chicago is nearing completion, and it is probable that some pipe will soon be needed for distributing lines to communities along the right of way. Orders for tank plates are limited to a few hundred tons, and inquiries are less promising than a week ago. The Northern Pacific underframes and superstructure sets, which will take about 3000 tons of steel, are still before the trade. Otherwise, this market is dull even to railroad shops, some of which are idle, while others are operating part time. A reflection of the situation at railroad shops is given by extreme pressure for delivery of materials ordered.

STRUCTURAL MATERIAL

New awards total 3200 tons, of which 2000 tons is for World's Fair buildings at Chicago. Fresh inquiries are scattered, the total being about 4000 tons. Chicago fabricators are eagerly seeking work and are reaching out into a wider territory than has been their practice in many years. Many public jobs, including a 4000-ton viaduct, are to be readvertised as a result of the new wage law in Illinois.

BARs

The most promising news in the bar market is that farm implement manufacturers are distinctly encouraged because of the movement of machinery from warehouses. They are now beginning to feel that production of farm machinery on a larger scale may not be far in the future. Production of rail steel bars has dipped to a

low at 35 per cent of capacity. Producers are keenly disappointed because the customary late summer movement of fence posts has not materialized.

RAILS AND TRACK SUPPLIES

Output of standard-section rails remains at 20 per cent of capacity. Current releases are just sufficient to maintain this rate in the near future. New orders for track supplies are for upward of 500 tons. Specifications for track fastenings have gained for the second consecutive week, and output has been raised slightly because of the pressure which railroads are exerting for prompt shipment. The light rail market is without feature.

REINFORCING BARS

Although there is a fair tonnage of reinforcing bar inquiries before the trade, the market lacks the snap it usually has at this time of year. Public work still holds the limelight, though in recent weeks there has been a noticeable falling off in public school work in Chicago. Quite a number of post offices are being figured. On the other hand, there is practically no tonnage for private building work. Awards of Illinois road work are light, not because the program is at the end, but for the reason that the new State wage law has forced many projects to be readvertised. Prices show wide variation and they seem to be utterly without backbone.

OLD MATERIAL

The local scrap market has turned very quiet, and prices are again under pressure in the few transactions that are being made. Most dealers are standing by, being hesitant to take either a long or a short position. The consequence is that not only are consumer purchases light, but there are few trades among dealers. Bor-

ings are in demand only at Kokomo, Ind. Very little heavy melting steel has moved in recent weeks, but brokers are expecting purchases in the near future. Prices for heavy melting and bundles are favorable for boat movements from Chicago to Eastern points, and there has been talk of deals of this kind. However, none has materialized. Railroad lists are noticeably smaller. The Pennsylvania is offering only 30,000 tons and the Milwaukee Road will sell only 600 tons. Light repair work and reduced forces for gathering scrap appear to be factors in this reduction of offerings.

*Prices del'd Chicago dist. consumers:
Per Gross Ton*

Basic Open-Hearth Grades:	
Heavy melting steel.....	\$8.50 to \$9.00
Shoveling steel	8.50 to 9.00
Frogs, switches and guards, cut apart, and misc. rails	8.50 to 9.00
Factory hyd. comp. sheets	7.00 to 7.50
Drop forge flashings.....	6.00 to 6.50
No. 1 busheling	6.75 to 7.25
Forg'd cast and r'd steel carwheels	9.00 to 10.00
Railroad tires, charg. box size	10.50 to 11.00
Railroad leaf springs cut apart	10.50 to 11.00
Axle turnings	7.00 to 7.50
Acid Open-Hearth Grades:	
Steel couplers and knuckles	9.75 to 10.25
Coil springs	11.50 to 12.00
Electric Furnace Grades:	
Axle turnings	7.50 to 8.00
Low phos. punchings....	10.75 to 11.25
Low phos. plates, 12 in. and under	10.50 to 11.00
Blast Furnace Grades:	
Cast iron borings.....	4.00 to 4.25
Short shoveling turnings..	3.75 to 4.25
Machine shop turnings....	3.75 to 4.25
Rolling Mill Grades:	
Rerolling rails	10.50 to 11.00
Cupola Grades:	
Steel rails, less than 3 ft..	10.25 to 10.75
Steel rails, less than 2 ft..	11.00 to 11.50
Angle bars, steel.....	9.25 to 9.75
Cast iron carwheels.....	10.00 to 10.50
Malleable Grades:	
Railroad	8.50 to 9.00
Agricultural	8.50 to 8.75
Miscellaneous:	
*Relaying rails, 56 to 60 lb.	19.00 to 21.00
*Relaying rails, 65 lb. and heavier	22.00 to 27.00

Per Net Ton

Rolling Mill Grades:	
Iron angle and splice bars.	8.50 to 9.00
Iron arch bars and trans- oms	10.50 to 11.00
Iron car axles	17.50 to 18.50
Steel car axles	12.00 to 12.50
No. 1 railroad wrought...	7.00 to 7.50
No. 2 railroad wrought...	7.50 to 8.00
No. 1 busheling	6.00 to 6.50
No. 2 busheling	4.00 to 4.50
Locomotive tires, smooth..	11.50 to 12.50
Pipes and flues.....	5.50 to 6.00
Cupola Grades:	
No. 1 machinery cast....	9.00 to 9.50
No. 1 railroad cast.....	8.00 to 8.50
No. 1 agricultural cast....	7.00 to 7.50
Stove plate	6.25 to 6.75
Grate bars	5.50 to 6.00
Brake shoes	5.75 to 6.25

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.



W. B. Coleman & Co., metallurgists, chemists and engineers, Philadelphia, have removed their laboratories to 1920 West Indiana Avenue, near the North Philadelphia station of the Pennsylvania Railroad.

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.00c.
Soft steel bars.....	2.75c.
Reinforcing bars, billet steel.....	1.55c. to 2.00c.
Rail steel reinforcement—	
For buildings	1.45c. to 1.65c.
Highway slabs	1.50c.
For bridges and culverts.....	1.65c.
Cold-fin. steel bars and shafting—	
Rounds and hexagons.....	3.10c.
Flats and squares	3.60c.
Bands, $\frac{3}{8}$ in. (in Nos. 10 and 12 gages)	2.95c.
Hoops (No. 14 gage and lighter)...	3.50c.
Hot-rolled annealed sheets (No. 24) ..	3.55c.
Galv. sheets (No. 24).....	4.10c.
Hot-rolled sheets (No. 10).....	3.20c.
Spikes ($\frac{3}{4}$ in. and larger).....	3.45c.
Track bolts	4.30c.
Rivets, structural	4.00c.
Rivets, boiler	4.00c.
Per Cent Off List	
Machine bolts	60, 10 and 10
Carriage bolts	60, 10 and 10
Coach and lag screws.....	60, 10 and 10
Hot-pressed nuts, sq., tap, or blank, 60, 10 and 10	
Hot-pressed nuts, hex., tap, or blank, 60, 10 and 10	
No. 8 black ann'd wire, per 100 lb.	\$3.45
Com. wire nails, base per keg.....	2.30
Cement c'd nails, base per keg.....	2.30

CLEVELAND

Operations Decline, Largely as Result of Automobile Plant Shut-downs

CLEVELAND, Aug. 4.—Nothing has occurred in the past week to arouse the market from its listlessness. A large number of consumers' plants continue either closed or operating at a discouragingly low rate, and this condition in turn is reflected in a sluggish demand for steel. Widespread shut-downs in the automobile industry, particularly the suspension at the Rouge plant of the Ford Motor Co., have been felt by parts makers in this district, many of which have been forced into idleness or to a still lower production basis.

After a week's gain in ingot output, operations have dropped precipitately, with only eight of a total of 34 local open-hearth furnaces active. This is equal to 23 per cent of ingot capacity, a drop of 12 points from last week. The open-hearth department of the Otis Steel Co. is again completely down after running three furnaces last week. Another steel company is operating five furnaces on a five-day schedule this week as against four furnaces seven days last week, while a third company has taken off two furnaces.

Steel bars are now being quoted by the local maker at 1.65c., Cleveland, for local or outside delivery. Heretofore the price was 1.70c. for delivery in Cleveland and 1.65c., Cleveland, for shipment to other points. Plates are no longer being quoted on a Cleveland base to railroad users, the Pittsburgh basing structure having been restored. They are firm at 1.60c., Pittsburgh.

The Cleveland Tractor Co. has received an order from the Pennsylvania State Highway Department for 125 tractors. This is one of the largest single orders ever placed by a State government and will necessitate the employment of 500 additional men.

IRON ORE

Shipments from upper Lake ports during July totaled 4,956,061 tons, compared with 8,586,649 tons in the corresponding month of 1930. This is a decrease of 3,630,588 tons, or 42 per cent. For the entire year to Aug. 1, shipments amounted to 10,709,320 tons, against 24,324,222 tons in the same period of last year, a decline of 55 per cent.

PIG IRON

There has been slightly increased activity the past week, with total sales at about 7000 tons. Included in the bookings were three 1000-ton orders. July shipments were approximately 10 per cent less than in June, but releases of pig iron on current contracts are expected to show gains the latter part of this month as users

swing back to a higher operating rate. It is estimated that foundries in this district are running now at 30 per cent of capacity. The market is virtually devoid of important inquiries. Prices are holding firm at \$16 to \$17, Lake furnace, for Ohio and Indiana, \$17 to \$17.50 for Michigan, and \$17, Cleveland, for local delivery.

Prices per gross ton at Cleveland:
N'th'n fdy., sil. 1.75 to 2.25.....\$17.00
S'th'n fdy., sil. 1.75 to 2.25..... 17.01
Malleable..... 17.50
Ohio silvery, 8 per cent..... 25.00
Stand. low phos., Valley..... 27.00

Prices are f.o.b. furnace except on Southern foundry and silvery iron. Freight rates: 50c. average local switching charge; \$3 from Jackson, Ohio; \$6.01 from Birmingham.

BARS, SHAPES AND PLATES

Interest centers in a reduction of \$1 a ton on steel bars for local delivery. The price heretofore has been 1.70c. to Cleveland consumers, but this has been revised to 1.65c. Outside users are continuing to pay 1.60c., Pittsburgh, or 1.65c., Cleveland, depending on which base yields the lower delivered price. The situation in plates has been clarified by announcement that a Cleveland base will no longer be applied on railroad work, the schedule being confined to a straight 1.60c. Pittsburgh base. Reinforcing bars still are weak, with quotations in many cases shaded \$1 to \$2 a ton. One thousand tons of structural steel for the Juvenile Court buildings here has been awarded to Fort Pitt Bridge Works Co. Otherwise, the structural market is almost devoid of work.

SHEETS

Fresh bookings have consisted of small lots for prompt delivery. Producers agree that the real test of the new price structure is likely to come the latter part of this month when material accumulated at the old quotations is worked off, but are con-

fident that they will meet with success. The refrigerating industry is yielding fairly liberal tonnages at the moment, especially in enameled stock.

WAREHOUSE BUSINESS

Local jobbers are considering revising gage differentials on black and galvanized sheets to conform to the changes made recently by sheet mills. It is possible that this revision may be announced before the end of this month.

STRIP STEEL

The meager tonnages which were placed the past week brought the new prices of 1.55c., Pittsburgh, for wide and 1.65c. for narrow. There has been no change in cold-rolled strip, which is firm at 2.15c., Cleveland.

OLD MATERIAL

The scrap market is virtually at a standstill. Local steel interests are not making purchases and other consumers are equally inactive. In the absence of transactions which might test prices, quotations are unchanged.

Prices per gross ton delivered consumers' yards:

Basic Open-Hearth Grades:		
No. 1 heavy melting steel...	\$8.50 to	\$9.00
No. 2 heavy melting steel...	8.00 to	8.50
Compressed sheet steel...	7.50 to	8.00
Light bundled sheet stampings.....	6.50 to	7.00
Dron forge flashings.....	6.75 to	7.00
Machine-shop turnings....	5.00 to	5.50
Short shoveling turnings....	6.50 to	7.00
No. 1 railroad wrought....	9.50 to	10.00
No. 2 railroad wrought....	10.00 to	10.50
No. 1 busheling.....	6.75 to	7.00
Pipes and flues.....	5.50 to	6.00
Steel axle turnings.....	7.50 to	8.00
Acid Open-Hearth Grades:		
Low phos., billet bloom and slab crops.....	14.00 to	14.50
Blast Furnace Grades:		
Cast iron borings.....	6.50 to	6.75
Mixed borings and short turnings.....	6.50 to	6.75
No. 2 busheling.....	6.00 to	6.25
Cupola Grades:		
No. 1 cast.....	10.00 to	10.50
Railroad grate bars.....	6.00 to	6.50
Stove plate.....	6.00 to	6.50
Itafis under 3 ft.....	15.00 to	15.50
Miscellaneous:		
Rails for rolling.....	13.00 to	13.50
Railroad malleable.....	11.00 to	11.25

Warehouse Prices, f.o.b. Cleveland

Base per Lb.	
Plates and struc. shapes.....	2.95c.
Soft steel bars.....	2.75c.
Reinforc. steel bars.....	1.75c. to 1.95c.
Cold-fin. rounds and hex.....	3.10c.
Cold-fin. flats and sq.....	3.60c.
Hoops and bands, No. 12 to 1/4 in. inclusive.....	3.00c.
Hoops and bands, No. 13 and lighter.....	3.55c.
Cold-finished strip.....	*5.55c.
Hot-rolled annealed sheets (No. 24).....	3.60c.
Galvanized sheets (No. 24).....	4.00c.
Hot-rolled sheets (No. 10).....	3.00c.
No. 9 ann'd wire, per 100 lb.....	\$2.25
No. 9 galv. wire, per 100 lb.....	2.70
Com. wire nails, base per keg.....	2.10

*Net base, including boxing and cutting to length.

Otis Steel Co., Cleveland, has put into operation a new hot bed for its 20-in. strip mill installed at a cost of \$400,000. Specially designed flying shears and piler are being constructed for the strip department. Satisfactory progress is being made in building the new 72-in. continuous strip mill, which the company hopes to complete late in the year, according to E. J. Kulas, president.

NEW YORK

Pig Iron and Steel Demand Fail to Reflect Improvement

NEW YORK, Aug. 4.—Pig iron demand continues to reflect abnormally quiet conditions among district melters. Prospective business, amounting to about 3000 tons, includes 1000 tons of foundry iron required by a Bridgeport, Conn., consumer for August-September delivery. Sales for the week totaled about 3900 tons, comprising small lots for rush shipment. No indications pointing to an early acceleration of foundry operations are discernible, although in a few scattered cases melts have shown a marked gain since the beginning of the month. Intensive canvassing of the trade by sellers indicates that pig iron stocks are at an irreducible minimum, with consumers, however, still disinclined to deviate from a hand-to-mouth policy in buying. Shading of \$15, Buffalo, is reported to have disappeared, but prices are untested in the absence of any large tonnages.

Prices per gross ton, delivered New York district:

Buffalo No. 2 fdy., sil. 1.75 to 2.25.....	\$19.41 to \$19.91
*Buff. No. 2, del'd east. N. J.	17.78 to 18.28
East. Pa. No. 2 fdy., sil. 1.75 to 2.25.....	17.39 to 17.89
East. Pa. No. 2X fdy., sil. 2.25 to 2.75.....	17.89 to 18.39

Freight rates: \$4.91 from Buffalo, \$1.39 to \$2.52 from eastern Pennsylvania. *Prices delivered to New Jersey cities having rate of \$3.28 a ton from Buffalo.

FINISHED STEEL

No note of encouragement is to be found in a survey of local steel trade conditions. August has begun with orders at the low rate of July, and there is nothing in the way of inquiries or other buying interest among consumers to indicate that any immediate increase in the volume of steel business is in prospect. While the trade continues to expect betterment in September, little hope is entertained for much, if any, change this month.

In the absence of important buying, the firmness of the price structure is the more notable. Sheet mills have sold virtually all classifications of sheets at the new prices with a minimum of objection on the part of buyers. The new 1.60c., Pittsburgh, base on bars, plates and shapes, or 1.70c. at Eastern mills, is being quite rigidly maintained, although occasional concessions from 1.70c., Coatesville, Pa., on plates are reported.

New business of importance in steel lines is scarce, but several jobs of good size which have been overhanging the market for weeks will soon be placed. One is 120,000 ft. (5580 tons) of 18-in. seamless or welded pipe in 30-ft. length for the West Side elevated highway, New York, and others are 600 tons of plates for a New York

Central warehouse in New York and 600 tons of 60-in. pipe for Ward's Island. An oil line inquiry is for 35 miles of 8-in. pipe.

An Eastern mill has booked an order for 4000 tons of steel pipe. Contract will be closed shortly for about 20,000 tons of structural steel for Inland Terminal No. 1 now being built in New York by the Port of New York Authority.

CAST IRON PIPE

Interest in pressure pipe continues to hold fairly steady. Racquette Lake, N. Y., is taking bids on 200 tons of 6 and 8-in., and Long Lake, N. Y., will open bids Aug. 20 on 1000 tons of 6 to 12-in. Thornwood, N. Y., is soliciting bids on 400 tons of 6 to 12-in., and the Village of Richburg, N. Y., is in the market for about 500 tons of 6 and 8-in. pipe. Public awards during the past week included 400 tons of 16-in. by Westerly, R. I., to R. D. Wood & Co., who also were low on a small tonnage for Schroom Lake, N. Y. Bids on 2400 tons of 4 to 12-in. pipe for Parsippany-Troy Hills, N. J., were opened on July 30, but the award has been postponed until the latter part of this week.

Prices per net ton delivered New York: Water pipe, 6-in. and larger, \$32.90; 4-in. and 5-in., \$35.90; 3-in., \$42.90. Class A and gas pipe, \$3 extra.

REINFORCING BARS

Quotations on billet steel reinforcing bars are unchanged at 1.60c.,

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and struc. shapes.....	2.70c. to 3.10c.
Soft steel bars, small shapes.....	2.70c. to 3.10c.
Iron bars.....	3.24c.
Iron bars, Swed. charcoal.....	7.00c. to 7.25c.
Cold-fin shafting and screw stock—	
Rounds and hexagons.....	3.40c.
Flats and squares.....	3.90c.
Cold-roll, scrap, soft and quarter	
hard.....	4.95c.
Hoops.....	3.75c.
Bands.....	3.40c.
Hot-rolled sheets (No. 10).....	3.00c. to 3.25c.
Hot-rolled ann't'd sheets (No. 24*).....	3.50c.
Galvanized sheets (No. 24*).....	4.00c.
Long terme sheets (No. 24).....	5.00c.
Standard tool steel.....	12.00c.
Wire, black annealed.....	4.50c.
Wire, galv. annealed.....	5.15c.
Tire steel, ½ x ½ in. and larger.....	3.40c.
Smooth finish, 1 to 2 ½ x ½ in.	
and larger.....	3.75c.
Open-hearth spring steel, bases.....	4.50c. to 7.00c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

	Per Cent Off List
Machine bolts, cut thread:	
¾ x 6 in. and smaller.....	.65 to .65 and 10
1 x 30 in. and smaller.....	.65 to .65 and 10
Carriage bolts, cut thread:	
¾ x 6 in. and smaller.....	.65 to .65 and 10
¾ x 20 in. and smaller.....	.65 to .65 and 10
Boiler Tubes:	Per 100 Ft.
Lap welded, 2-in.....	\$19.00
Seamless steel, 2-in.....	20.25
Charcoal iron, 2-in.....	26.25
Charcoal iron, 4-in.....	67.00

Pittsburgh, or 1.93c., New York, for medium-sized tonnages. Small lots usually bring 1.65c., Pittsburgh, or 1.98c., New York, and concessions of \$1 a ton from 1.60c., Pittsburgh, are granted on the larger projects.

OLD MATERIAL

No. 1 heavy melting steel is being bought at \$9 a ton, delivered to a Coatesville, Pa., mill, and at \$8.50 a ton, delivered to Claymont, Del. At the same time, the broker making shipments to Buffalo is offering \$6.25 a ton, on barge, New York or New Jersey, for No. 1 steel. No. 2 steel is in active demand by brokers filling contracts, and they are paying up to \$7.50 a ton, delivered Conshohocken, Pa., against a \$7 contract with the user there. This amounts to \$5.20, f.o.b. New Jersey yards, compared with \$5.25, on barge, paid for shipment to Buffalo. Other grades of scrap are inactive, except for some small buying of heavy breakable cast at \$10 a ton, delivered to Florence, N. J., and Harrisburg, Pa.

Dealers' buying prices per gross ton, f.o.b. New York:

No. 1 heavy melting steel..	\$5.00 to \$6.25
Heavy melting steel (yard)	3.00 to 3.50
No. 1 hvy. breakable cast.	6.50 to 7.00
Stove plate (steel works)...	3.75 to 4.00
Locomotive grate bars....	3.75 to 4.00
Machine shop turnings....	2.00
Short shoveling turnings...	2.00
Cast borings (blast fur. or steel works).....	2.25
Mixed borings and turnings.....	1.75 to 2.00
Steel car axles.....	13.00 to 13.50
Iron car axles.....	15.50 to 16.00
Iron and steel pipe (1 in. dia., not under 2 ft. long)	6.00 to 6.25
Forge fire.....	4.50
No. 1 railroad wrought....	8.25
No. 1 yard wrought, long..	7.25
Rails for rolling.....	6.00 to 6.50
Stove plate (foundry)....	4.50 to 4.75
Malleable cast (railroad)...	7.50 to 8.00
Cast borings (chemical)...	8.00 to 8.50

Prices per gross ton, deliv'd local foundries:

No. 1 machry, cast.....	\$11.00 to \$11.50
No. 1 hvy. cast (columns, bldg. materials, etc.; cupola size).....	9.00 to 9.50
No. 2 cast (radiators, cast boilers, etc.).....	8.00 to 8.50

General American Tank Car Corp., Chicago, has signed a contract for a large area of exhibit space in the travel and transport building at the International Exposition to be held in Chicago in 1933. The exhibit of this company will be educational as well as entertaining, showing how scores of products—liquids, oils, fruit, meat and produce—are shipped in tank, refrigerator and special kinds of freight cars.

PHILADELPHIA

Mill Operating Rates Unchanged— More Basic Pig Iron Bought

PHILADELPHIA, Aug. 4.—Operating rates of steel mills in eastern Pennsylvania are generally unchanged at an average of slightly more than 30 per cent of capacity. Although consumer interest in buying is no greater, mills show more firmness in maintaining prices. The stronger attitude is attributed to recent quarterly reports of steel companies, demonstrating that current prices at present operating rates provide little or no profit. On recent small orders for sheets, the new price schedule has been held, and some small contracts have been made for delivery of sheets during this quarter.

Chance separators at a new St. Nicholas, Pa., coal breaker, will require upward of 400 tons of plates. The Atlantic Refining Co. is about to close on a number of small oil tanks in addition to a contract recently awarded to a Chicago fabricator.

PIG IRON

Foundries are in most cases operating three or four days a week, but show no inclination to buy for possible forward requirements. Quotations are unchanged at \$16.25 to \$16.50 a ton, furnace, for eastern Pennsylvania foundry iron, and at \$11, furnace, or \$16.25, on dock Philadelphia, for Southern foundry iron. Stocks at Southern furnaces are increasing, but production is being further curtailed in the Birmingham district. Following purchase of 5000 tons of basic iron from eastern Pennsylvania producers, a Claymont, Del., consumer has closed on about 1000 tons more for barge shipment from a northern New York furnace.

Prices per gross ton at Philadelphia:

East. Pa. No. 2, 1.75 to 2.25 sil.	\$17.01 to \$17.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	17.51 to 17.76
East. Pa. No. 1X, 1.80 to 2.25 sil.	18.01 to 18.26
Basic (del'd east. Pa.)	16.75
Malleable	19.00 to 20.00
Stand. low phos. (f.o.b. east. Pa. furnace)	23.00 to 24.00
Cop. b'rg low phos. (f.o.b. furnace)	22.00 to 23.00
Va. No. 2 plain, 1.75 to 2.25 sil.	22.04
Va. No. 2, 2.25 to 2.75 sil.	22.54

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$4.54 from Virginia furnaces.

STEEL BARS

Requirements of consumers in this district are still small, being estimated by sellers at from 30 to 35 per cent of normal consumption. The price is unchanged at 1.60c. a lb., Pittsburgh, or 1.89c., delivered Philadelphia. Billet steel reinforcing bars are quoted at 1.60c., Pittsburgh, or 1.89c., Philadelphia, with concessions of \$1 a ton on the larger projects. Rail steel bars range from 1.20c. to 1.30c., Pittsburgh, or 1.49c. to 1.59c., Philadelphia.

SHAPES

On most current business mills are holding to 1.70c., f.o.b. nearest mill to consumer, or 1.76c., Philadelphia. Small miscellaneous specifications are usually quoted at 1.75c., mill, or 1.81c., Philadelphia, and on larger tonnages there are concessions to 1.65c., mill, or 1.71c., Philadelphia.

PLATES

The price is unchanged at 1.70c., Coatesville, Pa., or 1.80½c., Philadelphia. Most sellers are adhering more firmly to this level than in recent weeks and, with no sizable tonnages in the market, concessions from this level are rare. About the only important requirement at present is the plates for chance separators at a St. Nicholas, Pa., coal breaker.

SHEETS

Consumers of sheets are maintaining fair rates of operation. Automobile body builders in particular have some substantial contracts in prospect, which are expected to engage them well into the fall. Although radio manufacturers had expected to be on full production programs by August, only one maker has reached a fairly good schedule. It is making 4000 sets a day. Small contracts for hot-rolled and some cold-rolled sheets have been made at the full quoted prices for delivery over the rest of this quarter.

IMPORTS

In the week ended Aug. 1, 6680 tons of iron ore arrived at this port from Algeria, 650 tons of pig iron and 50 tons of spiegeleisen were received from the United Kingdom, and 10 tons of structural shapes came from Belgium.

OLD MATERIAL

Holders of scrap are inclined to refrain from selling except at advances

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Plates, ¼-in. and heavier	2.50c.
Structural shapes	2.50c.
Soft steel bars, small shapes, iron bars (except bands)	2.60c.
Reinforce. steel bars, sq., twisted and deform.	2.30c.
Cold-fin. steel, rounds and hex.	3.40c.
Cold-fin. steel, sq. and flats	3.90c.
Steel hoops	3.15c.
Steel bands, No. 12 to ¼-in. inclu.	2.90c.
Spring steel	5.00c.
Hot rolled, box annealed sheets (No. 24)	3.55c.
Galvanized sheets (No. 24)	4.00c.
Hot rolled blue annealed sheets (No. 10)	3.65c.
Diam. pat. floor plates, ¼-in.	5.20c.
Swedish iron bars	6.60c.

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars

in price, but consumers show little interest in buying more than distress carload lots of material offered at low prices. Heavy breakable cast is slightly stronger on the basis of recent purchases at \$10.50 a ton, delivered to a Florence, N. J., consumer, and \$10, delivered to a Harrisburg user. A Pencoyd, Pa., consumer of automobile grade of melting steel has offered to buy at \$7.25 a ton, delivered. Other grades are quiet.

Prices per gross ton delivered consumers' yards, Philadelphia district:

No. 1 heavy melting steel	\$8.25 to \$9.25
No. 2 heavy melting steel	7.00 to 7.25
No. 1 railroad wrought	10.00 to 10.50
Bundled sheets (for steel works)	6.50
Hydraulic compressed, new	7.00 to 8.00
Hydraulic compressed, old	6.00 to 7.00
Machine shop turnings (for steel works)	5.00 to 6.00
Heavy axle turnings (or equiv.)	8.00 to 8.50
Cast borings (for steel works and roll. mill)	5.00 to 6.00
Heavy breakable cast (for steel works)	10.00 to 10.50
Railroad grate bars	8.00
Stove plate (for steel works)	8.00
No. 1 low phos., hvy. (0.04% and under)	12.00 to 13.00
Couplers and knuckles	11.00
Rolled steel wheels	10.50 to 11.00
No. 1 blast furnace	5.50
Wrot. iron and soft steel pipe and tubes (new specific)	10.50 to 11.00
Shafting	16.50
Steel axles	16.00 to 16.50
No. 1 forge fire	8.00 to 8.50
Cast iron carwheels	12.00 to 12.50
No. 1 cast	11.00 to 11.50
Cast borings (for chem. plant)	11.50 to 12.00
Steel rails for rolling	10.50 to 11.00

Boiler Orders Better in June

Orders for steel boilers in June totaled 820 units, with 678,859 sq. ft. of heating surface, against 658 of 603,401 sq. ft. in May, according to reports received by the Bureau of the Census from 73 identical manufacturers. In the first six months of 1931 orders were placed for 3911 boilers of 3,971,313 sq. ft., compared with 6452 of 7,272,758 sq. ft. in the corresponding period of last year.

New Bunting Babbitt Metal

A new babbitt metal is announced by the Bunting Brass & Bronze Co., Toledo, Ohio. It is a lead base product, packaged in a unique, serviceable wooden box with hinged lid containing ten 5-lb. bars, cast in a form to be readily divisible into smaller portions. Each bar is individually wrapped in silver paper. The product is intended for all operations served by a lead base babbitt.

BOSTON

Mystic Blast Furnace Blown Out— Foundry Melt Declines

BOSTON, Aug. 4.—The feature of the pig iron market is the blowing out of the Mystic furnace, Everett, Mass., following a run of nearly five years on its initial lining. The blowing out of this stack does not eliminate the company from the market, because it has ample stocks to meet all requirements until the furnace is blown in again. High temperatures and vacation periods have reduced the New England foundry melt. Pig iron sales have been small as a result. A Worcester, Mass., foundry is in the market for 300 tons of No. 2 plain for August, September and October delivery, and two other melters are negotiating for round tonnages.

Foundry iron prices per gross ton deliv'd to most New England points:

*Buffalo, sil. 1.75 to 2.25..	\$19.91
*Buffalo, sil. 2.25 to 2.75..	19.91
†Buffalo, sil. 1.75 to 2.25..	19.28
†Buffalo, sil. 2.25 to 2.75..	19.28
*Ala., sil. 1.75 to 2.25.....	\$20.11 to 20.61
*Ala., sil. 2.25 to 2.75.....	20.61 to 21.11
†Ala., sil. 1.75 to 2.25.....	16.75
†Ala., sil. 2.25 to 2.75.....	17.25

Freight rates: \$4.91 all rail and \$4.28 rail and water from Buffalo; \$9.61 all rail from Alabama and \$5.75 rail and water from Alabama to New England seaboard.

*All rail rate.

†Rail and water rate.

FABRICATED STEEL

Lettings the past week approximated 2000 tons. The largest award was 500 tons for a Maine bridge.

CAST IRON PIPE

Interest of pipe foundries is centered on Medfield, Mass., which will close bids Aug. 11 on 1940 tons of 6, 8, 10 and 16-in. pipe. The largest award the past week was 600 tons of 8, 12 and 16-in. pipe to R. D. Wood & Co. for Westerly, R. I. The American Cast Iron Pipe Co. sold 300 tons of

gas pipe to a Providence, R. I., gas company.

REINFORCING STEEL

Sales in the week were about 1100 tons; the largest order was for 600 tons for a Connecticut hospital. No new business developed, but it is expected that two or three tonnages for Massachusetts road work will soon be closed. Prices are steady, with billet bars from stock quoted as follows: One to 5-ton lots, 3c. a lb., base; 6 to 99-ton lots, 2.40c.; 100-ton lots and larger, 2.30c. Rail steel bars are 2.26½c. a lb., delivered Boston rate points.

OLD MATERIAL

Recent price advances have held. Business, however, is extremely quiet.

Virtually nothing is being shipped out of dealers' yards. Some buying for delivery in the Youngstown district is expected this month by local brokers.

Buying prices per gross ton, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel..	\$4.50 to \$5.00
Scrap T rails.....	4.00 to 4.50
Scrap girder rails.....	3.00 to 3.50
No. 1 railroad wrought...	7.00 to 7.50
Machine shop turnings...	1.25 to 1.80
Cast iron borings (steel works and rolling mill)	1.50 to 1.75
Bundled skeleton, long...	3.00 to 3.25
Forged flashings	5.00 to 5.25
Blast furnace borings and turnings	1.50 to 1.75
Forge scrap	0.50 to 0.80
Shafting	10.00 to 10.50
Steel car axles.....	11.00 to 12.00
Wrought pipe, 1 in. in diameter (over 2 ft. long)	5.00 to 5.25
Rails for rolling.....	7.50 to 8.00
Cast iron borings, chemical	7.00 to 7.25
No. 2 cast.....	5.00 to 5.25

Prices per gross ton deliv'd consumers' yards:

Textile cast	\$9.50 to \$10.00
No. 1 machinery cast.....	9.50 to 10.00
Stove plate	5.00 to 5.25
Railroad malleable	13.00 to 13.50

ST. LOUIS

Summer Dullness Prevails—Prices of a Number of Scrap Grades Decline

ST. LOUIS, Aug. 4.—New buying and shipments of pig iron have fallen to small proportions, the total of orders booked the past week being only a little over 500 tons. Inquiry for the remainder of the present quarter is in small volume, and interest in fourth quarter iron is completely lacking. At the present low rate of melt, stocks will be sufficient to carry on with for some weeks. Several gray iron and malleable foundries which closed around July 1 and had intended opening the first of this month have further postponed activity because of absence of business and the intense heat. Prices remain unchanged on the basis of \$15.42, delivered, for Southern iron, and \$17.50, furnace, for Northern.

Prices per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25, f.o.b. Granite City, Ill.....	\$17.50
Malleable, f.o.b. Granite City.....	17.50
N'th'n No. 2 fdy., deliv'd St. Louis..	19.66
Southern No. 2 fdy., deliv'd.....	15.42
Northern malleable, deliv'd.....	19.66
Northern basic, deliv'd.....	19.66

Freight rates: 75c. (average) Granite City to St. Louis; \$2.16 from Chicago; \$4.42 from Birmingham.

FINISHED MATERIAL

Demand for sheets and steel plates is about holding its own, with slight betterment noted in the call for certain gages of galvanized sheets. July business in this area fell below June, which was to be expected on account of large amounts taken in June in order to avoid the advance in prices effective July 1. Warehousemen complain of quietness in their trade, the only commodities showing life being those used in highway construction and other outdoor engineering projects. Withal, prices hold firm, and no notable resistance to present levels

has developed. Small jobs predominate in the fabricating lines, but several sizable undertakings calling for substantial tonnages are believed to be close to the point where they will crystallize into lettings. Pending is a contract for 1500 tons of reinforcing bars for a reservoir at the municipal waterworks, Memphis, Tenn.

OLD MATERIAL

Less confidence on the part of certain dealers, coupled with a large run of railroad offerings, has had a weakening effect on scrap iron and steel prices. Specific reductions were made in a number of grades, including steel specialties, selected heavy melting steel, malleable, cast, carwheels and miscellaneous rails. An exception to the decline was cast borings, which were marked up 50c. per ton. The reason for this was not new demand,

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Plates	3.36½c.
Structural shapes—	
Angles and beams.....	3.36½c.
Tees	3.36½c.
Zees	3.36½c.
Soft steel bars, small shapes.....	3.26½c.
Reinforcing bars	3.11½c. to 3.26½c.
Iron bars—	
Refined	3.26½c.
Best refined	4.60c.
Norway rounds	6.60c.
Norway squares and flats.....	7.10c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 5.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold-rolled steel—	
Rounds and hex.....	3.50c. to 5.50c.
Squares and flats.....	4.00c. to 6.00c.
Toe calk steel.....	6.00c.
Rivets, structural or boiler.....	4.80c.
	Per Cent Off List
Machine bolts .....	.65 and 5
Carriage bolts .....	.65 and 5
Lag screws .....	.65 and 5
Hot-pressed nuts .....	.40 and 10
Cold-punched nuts .....	.40 and 10
Stove bolts .....	.70 and 10

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and struc. shapes.....	3.25c.
Bars, soft steel or iron.....	3.00c.
Cold-fin. rounds, shafting, screw stock	3.35c.
Hot-rolled annealed sheets (No. 24)	3.80c.
Galv. sheets (No. 24).....	4.35c.
Hot-rolled sheets (No. 10).....	3.45c.
Black corrug. sheets (No. 24).....	3.85c.
Galv. corrug. sheets.....	4.40c.
Structural rivets	4.15c.
Boiler rivets	4.15c.
	Per Cent Off List
Tank rivets, ½-in. and smaller, 100 lb. or more .....	.65
Less than 100 lb.....	.60
Machine bolts .....	.60 and 10
Carriage bolts .....	.60 and 10
Lag screws .....	.60 and 10
Hot-pressed nuts, sq., blank or tapped, 200 lb. or more.....	.60 and 10
Less than 200 lb.....	.50 and 10
Hot-pressed nuts, hex., blank or tapped, 200 lb. or more.....	.60 and 10
Less than 200 lb.....	.50 and 10

but a scarcity of material and a desire on the part of some dealers to cover contracts soon to expire. Purchasing by the industries continues extremely light, and many have ample supplies and will need nothing until early fall. Railroad offerings were the largest in some time, and bidding was much less spirited than a few weeks back. Latest lists were: Pennsylvania, 29,910 tons; Missouri Pacific, 120 cars; Big Four, 12 cars; Chicago & North Western, 146 tons; Baltimore & Ohio, 3980 tons; St. Louis-San Francisco, 10 cars; Milwaukee, 35 tons, and Chicago & Eastern Illinois, 69 cars.

Dealers' buying prices per gross ton, f.o.b. St. Louis district:
Selected heavy melting steel \$8.00 to \$8.25
No. 1 heavy melting or shoveling steel 8.00 to 8.50

No. 2 heavy melting or shoveling steel	7.00 to 7.75
No. 1 locomotive tires....	10.50 to 11.00
Misc. stand-sec. rails including frogs, switches and guards, cut apart...	9.00 to 9.50
Railroad springs	9.25 to 9.75
Bundled sheets	5.50 to 6.00
No. 2 railroad wrought...	8.00 to 8.50
No. 1 busheling	6.00 to 6.50
Cast iron borings and shoveling turnings	5.50 to 6.00
Iron rails	8.00 to 8.50
Rails for rolling	10.50 to 11.00
Machine shop turnings....	3.50 to 4.00
Heavy turnings	7.00 to 7.50
Steel car axles	12.50 to 13.00
Iron car axles	17.50 to 18.00
Wrot. iron bars and trans.	8.25 to 8.75
No. 1 railroad wrought...	5.00 to 5.50
Steel rails, less than 3 ft..	12.00 to 12.50
Steel angle bars	8.25 to 8.75
Cast iron carwheels	7.25 to 7.75
No. 1 machinery cast	8.50 to 9.00
Railroad malleable	7.50 to 8.00
No. 1 railroad cast	7.75 to 8.25
Stove plate	7.00 to 7.50
Relay. rails, 60 lb. and under	16.00 to 16.50
Relay. rails, 70 lb. and over	20.00 to 21.00
Agricult. malleable	6.75 to 7.25

YOUNGSTOWN

YOUNGSTOWN, Aug. 3.—Heavier raw steel requirements by pipe mills, together with a willingness on the part of the larger companies in the district to build up stocks of raw steel in expectation of a better fall demand, have brought an unseasonal rise in steel ingot production in the Valleys. Production last week rose to over 40 per cent of capacity, with one large mill operating 10 out of 12 open-hearth units. It is not likely that this rate can be continued throughout August. There has been, in fact, a curtailment to about 35 per cent this week. At the same time finishing mill operations in general are not higher than 30 per cent of capacity, this being especially true if line pipe production is not considered. One of the electric-weld pipe mills in the district is running at virtual capacity on a large order received a few weeks ago, and the other is maintaining a steady production mainly because of a large supply of small orders. Pipe mills are also taking additional Bessemer steel, and Bessemer production has risen as much as open-hearth output.

With the exception of pipe-making capacity, conditions in the Valley at the beginning of the month are changed very little from July. Demand for sheets has fallen to approximately the same levels which prevailed during June, and, as consumers took rather heavy shipments during July at the old price levels, they are not expected to be in the market to any large extent before the first of September. Sheet mill production is at about 35 per cent of capacity and may fall slightly lower during the month. Demand for strip is also declining because of inactivity on the part of automobile makers, but Valley mills are sharing in the business

Ingot Production Above 40 Per Cent—Pipe Mills More Active

of one large Detroit company which has increased schedules for August. Alloy steel bars are affected in the same way as sheets and strip, and merchant bars are generally dull.

Republic Steel Corp'n. has started 11 additional tin mills at its Warren property, giving it 24 active in all. On Sunday night, 13 units were placed in service, and the plant is now operating at a higher rate than at any time in several months. The resumption gives employment to 500 additional workers. At Niles, 14 sheet mills are engaged this week, the highest number in several weeks.

Activity continues in reinforcing bars, with shipments against contracts holding at old levels. There is no general demand for plates, and large users in the immediate Valley territory are taking only about one third of their normal requirements. Wire nails are also dull, with little demand expected for merchant products until after crops are harvested. The local tin mill has reflected the general decline in tin plate demand and is running at approximately 50 per cent of capacity.

Prices are nominally strong and are well maintained in the face of light purchases. Mills do not expect any real test for another month, and in the meantime are emphasizing the need for stability and even advances if the large operating deficits reported by the principal companies in the first half are to be turned into profits in the last half of the year. Attempts to stabilize quotations on line pipe which were made during June and July have been largely successful, and this market is said to be on a profitable basis. No deviation from the 1.60c., Pittsburgh, price in bars and plates is reported, and sheet makers are enthusiastic about the apparent success of their efforts to maintain the new price schedules. On this basis galvanized sheets are holding at 2.90c., Pittsburgh; hot-rolled annealed at 2.40c.; ordinary hot-rolled from continuous mills at 1.70c., and automobile body sheets at 3.10c. Hot-rolled strip is also firm at 1.55c. and 1.65c., Pittsburgh, and cold-rolled is unchanged at 2.15c., Pittsburgh or Cleveland.

Following a considerable purchase of scrap by a large independent user in the district, the market is again quiet, but continues quotable at \$10.50 to \$11 on No. 1 heavy melting steel.

BIRMINGHAM

Steel Tonnage Shows Little Variation—Heavy Melting Scrap Off \$1

BIRMINGHAM, Aug. 4.—The pig iron market is still extremely sluggish, and there are no indications that August will bring noticeable improvement. Buying conditions are the same as for months past, with current business consisting almost entirely of small orders. Quotations remain at \$12 to \$13 on district deliveries. Ten furnaces are in blast. Last week Woodward Iron Co. had Woodward No. 1 and No. 2 banked for a few days, then on July 30 blew out Woodward No. 3 and resumed operations at the other two. The Tennessee company changed Ensley No. 5 on Aug. 1 from spiegel to ferromanganese. This company is now operating four stacks, having blown out Ensley No. 6 on July 23.

Prices per gross ton, f.o.b. Birmingham dist. furnaces:
No. 2 fdy., 1.75 to 2.25 sil., \$12.00 to \$13.00
No. 1 fdy., 2.25 to 2.75 sil., 12.50 to 13.50
Basic 12.00 to 13.00

FINISHED STEEL

Demand is holding to a fairly steady, if low, rate. Tonnage from week to week is running about the same and is distributed among various products. A satisfactory sheet volume is beginning to develop at the new prices. Fabricators are in the midst of a quiet period. The only sizable order last week was for 200 tons of structural steel, placed with Ingalls Iron Works for the Hialeah race track at Miami, Fla. Active open-hearths number 11, the Tennessee company operating four at Ensley and four at Fairfield; the Gulf States Steel three at Alabama City.

CAST IRON PIPE

The past week brought only the usual run of small orders. This new tonnage was not sufficient to affect

operating and market conditions. Plant operations remain around 50 per cent. Quotations continue at \$35 to \$36.

OLD MATERIAL

A slight improvement was reported last week in inquiries, sales and shipments, mostly in the steel grades. Heavy melting steel is off \$1 a ton and quotations now range from \$8.50

to \$9. No other price changes have been made.

Prices per gross ton deliv'd Birmingham dist. consumers' yards:

Heavy melting steel.....	\$8.50 to \$9.00
Scrap steel rails.....	8.50
Short shoveling turnings.....	6.50
Cast iron borings.....	(No market)
Stove plate.....	7.00
Steel axles.....	15.00 to 16.00
Iron axles.....	18.00
No. 1 railroad wrought.....	8.00
Rails for rolling.....	11.50 to 12.00
No. 1 cast.....	9.00
Tramcar wheels.....	10.00 to 10.25
Cast iron borings, chem.....	13.50

BUFFALO

Pig Iron Sales in July Larger Than in June

BUFFALO, Aug. 4.—Pig iron sales in July were somewhat better than those of June. Shipments on contracts held up as well as in June. About 4000 tons was placed during the past week, most of it in small tonnages. Sizable inquiry is scarce. Melters in the East are asking for figures on two 300-ton lots of foundry iron. District business is limited to 100-ton lots and less. No deviation from the \$17 minimum is apparent. One producer is adhering firmly to \$16 on Eastern business, while others are shading to \$15.50.

Prices per gross ton, f.o.b. furnace:

No. 2 fdy., sil. 1.75 to 2.25.....	\$17.00
No. 2X fdy., sil. 2.25 to 2.75.....	17.50
No. 1 fdy., sil. 2.75 to 3.25.....	18.50
Malleable, sil. up to 2.25.....	17.50
Basic.....	17.00
Lake Superior charcoal.....	25.28

FINISHED STEEL

The Lackawanna plant of the Bethlehem Steel Co. has reduced its open-hearth operation from 12 to 10 furnaces; Republic Steel is operating one open-hearth, with the possibility of adding one if bar tonnage holds up as well as it has. The Seneca Iron & Steel Co., after a week's shut-down, has resumed with about a 40 per cent operation. Wickwire Spencer has reduced its open-hearth operation from three to two furnaces. Five hundred tons of structural steel for an addition to the Buffalo General Hospital has been awarded to a local fabricator. Reinforcing bar business is extremely quiet. Warehouse business in July ran 8 or 10 per cent behind that of June.

OLD MATERIAL

The market is very quiet. With the exception of some scattering sales of No. 1 machinery cast at around \$9.75,

there has been no activity. The leading consumer in this district continues to offer \$9 for No. 1 heavy melting steel and \$7.50 for No. 2 heavy melting steel, but is getting very little tonnage at these figures. Scrap is becoming scarcer, and the low prices here are beginning to divert material to other markets.

Prices per gross ton, f.o.b. Buffalo consumers' plants:

Basic Open-Hearth Grades:		
No. 1 heavy melting steel.....		\$9.00
No. 2 heavy melting scrap.....		7.50
Scrap rails.....	\$10.00 to	10.50
Hydraul. comp. sheets.....		7.50
No. 2 hydraul. comp. sheets.....		7.00
Hand bundled sheets.....		7.00
Drop forge flashings.....		7.50
No. 1 busheling.....		7.50
Hvy. steel axle turnings.....	8.50 to	9.50
Machine shop turnings.....	4.50 to	5.00
No. 1 railroad wrought.....	7.50 to	8.00
Acid Open-Hearth Grades:		
Knuckles and couplers.....	11.00 to	11.50
Coil and leaf springs.....	11.00 to	11.50
Roller steel wheels.....	11.00 to	11.50
Low phos. billet and bloom ends.....	13.00 to	14.00
Electric Furnace Grades:		
Short shov. steel turnings.....	6.00 to	6.50
Blast Furnace Grades:		
Short mixed borings and turnings.....	6.00 to	6.50
Cast iron borings.....	6.00 to	6.50
No. 2 busheling.....	4.50 to	5.00
Rolling Mill Grades:		
Steel car axles.....	15.00 to	15.50
Iron axles.....	16.00 to	16.50
Cupola Grades:		
No. 1 machinery cast.....	9.75 to	10.00
Stove plate.....	8.00 to	8.25
Locomotive grate bars.....	7.00 to	7.50
Steel rails, 3 ft. and under.....	13.00 to	13.50
Cast iron carwheels.....	11.50 to	12.00
Malleable Grades:		
Industrial.....	10.00 to	10.50
Railroad.....	10.00 to	10.50
Agricultural.....	10.00 to	10.50
Special Grades:		
Chemical borings.....	9.00 to	9.50

Canada

Lull in Demand Is Unbroken

TORONTO, Aug. 4.—Pig iron melters have made no change in their buying policy and are entering the market for small tonnage lots as demands dictate. No future buying is being done. Inquiries are appearing at irregular intervals, and there is considerable competition and some price shading for orders. The daily melt is gradually moving downward, but pig iron production is holding up, particularly in foundry and malleable iron, with producers stacking metal against future requirements. Imports

have fallen off during the past six weeks, with practically no iron now coming from Great Britain.

Prices per gross ton:

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75.....	\$22.60
No. 2 fdy., sil. 1.75 to 2.25.....	22.10
Malleable.....	22.60
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75.....	\$24.00
No. 2 fdy., sil. 1.75 to 2.25.....	23.50
Malleable.....	24.00
Basic.....	20.50

STRUCTURAL STEEL

Structural steel demand has tapered, with sales running mostly to lots of 200 tons and less. Bids will be called within the next month for steel for a couple of the large bridge projects in Quebec, and there are some sizable orders pending from western Canada. Ontario fabricators are operating at around 50 per cent, but are not obtaining much new business in the way of large contracts.

OLD MATERIAL

Consumers are buying on a hand-to-mouth basis and are keeping inventories as low as possible. No future buying has been done recently, and dealers state they are carrying very little business on their books. Mills are restricting themselves to specialized buying, which results in a very small movement of steel grades. Iron scrap lines are slowing down. Dealers are still out of the market and are supplying most demands direct from yard stocks. Prices are unchanged.

Dealers' buying prices for old material:

Per Gross Ton		
	Toronto	Montreal
Heavy melting steel.....	\$7.00	\$6.00
Rails, scrap.....	7.00	6.00
No. 1 wrought.....	6.00	8.00
Machine shop turnings.....	2.00	2.00
Boiler plate.....	5.00	4.50
Heavy axle turnings.....	2.50	2.50
Cast borings.....	2.00	2.00
Steel borings.....	2.00	2.00
Wrought pipe.....	2.00	2.00
Steel axles.....	7.00	9.00
Axles, wrought iron.....	7.00	11.00
No. 1 machinery cast.....	10.00	10.00
Stove plate.....	8.00	8.00
Standard carwheels.....	8.50	8.50
Malleable.....	8.00	8.00
Per Net Ton		
No. 1 machinery cast.....	11.00	....
Stove plate.....	9.00	....
Standard carwheels.....	10.00	....
Malleable scrap.....	9.00	....

Warehouse Prices, f.o.b. Cincinnati

Base per Lb.

Plates and struc. shapes.....	3.25c.
Bars, soft steel or iron.....	3.00c.
New billet reinforce. bars.....	3.00c.
Rail steel reinforce. bars.....	3.00c.
Hoops.....	3.90c.
Bands.....	3.20c.
Cold-fin. rounds and hex.....	3.50c.
Squares.....	4.00c.
Hot-rolled annealed sheets (No. 24).....	3.75c.
Galv. sheets (No. 24).....	4.25c.
Hot-rolled sheets (No. 10).....	3.30c.
Structural rivets.....	4.20c.
Small rivets.....	60 per cent off list
No. 9 ann'l'd wire, per 100 lb.....	\$3.00
Com. wire nails, base per keg (25 kegs or more).....	2.95
Cement c't'd nails, base 100 lb. keg.....	2.95
Chain, per 100 lb.....	10.25
Net per 100 Ft.	
Lap-welded steel boiler tubes, 2-in.....	\$16.50
4-in.....	34.50
Seamless steel boiler tubes, 2-in.....	17.50
4-in.....	36.00

Warehouse Prices, f.o.b. Buffalo

Base per Lb.

Plates and struc. shapes.....	3.25c.
Soft steel bars.....	3.00c.
Reinforcing bars.....	2.65c.
Cold-fin. flats and sq.....	3.65c.
Rounds and hex.....	3.15c.
Cold-rolled strip steel.....	5.25c.
Hot-rolled annealed sheets (No. 24).....	3.70c.
Galv. sheets (No. 24).....	4.10c.
Bands.....	3.35c.
Hoops.....	3.90c.
Hot-rolled sheets (No. 10).....	3.50c.
Com. wire nails, base per keg.....	\$2.45
Black wire, base per 100 lb.....	3.20

CINCINNATI Pig Iron Market Dull—Recession in Demand for Sheets

CINCINNATI, Aug. 4.—The pig iron market is again dull, following a brief spurt a week or so ago. Sales by furnace representatives were about 1650 tons, all in small quantities. Inquiry has slackened. Buyers are now taking iron from usual sources of supply without inquiry and ask almost immediate shipment. Keen competition among Northern furnaces has brought unsettled prices. Southern iron, however, is firm despite the fact that the market is not absorbing much of it.

Prices per gross ton, deliv'd Cincinnati:
Ala. fdy., sil. 1.75 to 2.25.....\$14.69
Ala. fdy., sil. 2.25 to 2.75..... 15.19
Tenn. fdy., sil. 1.75 to 2.25..... 14.69
S'th'n Ohio silvery, 8 per cent..... 23.89

Freight rates, \$1.89 from Ironton and Jackson, Ohio; \$3.69 from Birmingham.

FINISHED STEEL

With one large manufacturer of low-priced cars out of the market for a month and others announcing shut-downs for vacations, there is a noticeable recession in demand for sheets. What orders are being placed are merely to balance present stocks and are not in anticipation of increased consumption. Demand is slightly un-

der 40 per cent of capacity, with production at about the same rate. Despite the quietness of the market, however, there is relatively no pressure on prices. The leading independent sheet producer reports that the price situation is in a well-stabilized condition.

OLD MATERIAL

While some scrap is moving on old contracts, the market is quiet and featureless. Mills are accepting only small quantities of scrap for urgent needs and are not placing future orders. Prices are largely nominal.

Dealers' buying prices per gross ton, f.o.b. cars, Cincinnati:

Heavy melting steel.....	\$7.25 to \$7.75
Scrap rails for melting....	10.25 to 10.75
Loose sheet clippings.....	3.50 to 4.00
Bundled sheets.....	6.75 to 7.25
Cast iron borings.....	3.75 to 4.25
Machine shop turnings....	4.00 to 4.50
No. 1 busheling.....	5.75 to 6.25
No. 2 busheling.....	3.75 to 4.25
Rails for rolling.....	11.00 to 11.50
No. 1 locomotive tires....	9.50 to 10.00
No. 2 railroad wrought....	7.25 to 7.75
Short rails.....	13.00 to 13.50
Cast iron carwheels.....	10.50 to 11.00
No. 1 machinery cast.....	12.50 to 13.00
No. 1 railroad cast.....	11.50 to 12.00
Burnt cast.....	5.25 to 5.75
Stove plate.....	5.25 to 5.75
Brake shoes.....	5.25 to 5.75
Agricultural malleable....	10.00 to 10.50
Railroad malleable.....	11.00 to 11.50

PACIFIC COAST

SAN FRANCISCO, Aug. 3.—All departments of the trade are very quiet. Buying for stock is minimized by recent declines on wire products and by some weakness in the market for plates and shapes. The amount of foreign material being landed on the Pacific Coast is increasing, especially in reinforcing bars, some steel bars, wire products and light shapes. As a result, domestic mills are restive at further losses from an already shrunken volume and wholesalers are apprehensive. Warehouse volume is reported to be from 30 to 40 per cent below that of last year, and Pacific Coast mills are operating at only 25 to 30 per cent of capacity. Several

Foreign Steel Upsetting Price Structure—Business Dull

fabricators and contractors are fairly busy with a few large contracts, but activity in general is at low ebb.

BARs

A stock order for 6000 tons of foreign soft steel bars is reported to have been placed by a jobber. Public lettings of reinforcing bars during the week for 100 tons or more totaled nearly 1100 tons, with general contracts totaling 2200 tons additional. New inquiries were for little over 500 tons. The market for domestic bars is fairly firm, with foreign bars quoted lower and tending to depress the general market structure.

PLATES

The Steel Tank & Pipe Co. of Oregon has been awarded 1600 tons of welded steel plates for eight miles of 16-in. pipe line for the Mountain Lakes Water Co. at Seattle. Plates are weak, with little movement and few inquiries.

SHAPES

Reported awards totaled 2300 tons, with some 1700 tons of new inquiries. Considerable tonnage is pending, especially where general contractors have delayed placing their specifications for steel.

CAST IRON PIPE

Nearly 1000 tons in the aggregate was publicly awarded, and approximately the same quantity is involved in new inquiries, the largest of which

is for 246 tons of 6 and 12-in. pipe for Huntington Park, Los Angeles, on which the Griffith Co. is low on the general contract. The largest letting was to the New Mexico Construction Co. of Albuquerque for 730 tons of 2 to 12-in. for Boulder City, near Las Vegas, Nev.

Detroit

New Basing Point on Bars Has Been Rescinded

DETROIT, Aug. 3.—So much confusion among both steel producers and buyers in this district regarding the application of a Detroit base price on steel bars has resulted that leading mills have rescinded their action in establishing this new base. The chief difficulty seems to be the inequality it creates between local bar users and those in outlying centers, such as Pontiac, Flint, Lansing and Jackson. Heretofore the forging shops in Detroit and in other cities in southeastern Michigan have had to pay virtually the same delivered price for bars. There was, of course, a slight difference in freight rates from Pittsburgh, but not enough to give much advantage to either party.

Under the new arrangement, however, this balance was destroyed. A consumer at Lansing, for instance, would be charged upward of \$2 a ton more for steel bars than his competitor in Detroit. In some cases the short-haul rate from Detroit to Michigan points is less than the rate from Pittsburgh; wherever this is true, the consumer was to get the benefit of the lowest delivered price. It is admitted, however, that users outside Detroit were not pleased by the new set-up.

OLD MATERIAL

With dealers bidding keenly for the comparatively small tonnages of scrap on August lists of automobile companies, prices have again turned upward. Heavy melting steel, hydraulic bundles, sheet clips and borings and short turnings advanced 25c. a ton, while long turnings are 50c. a ton higher than a week ago. The local steel maker is reported to have purchased small lots of the heavy grades of scrap, but otherwise consumers do not seem interested. Dealers appear confident that mill buying will get under way before the end of this month.

Dealers' buying prices per gross ton, f.o.b. cars, Detroit:

Hvy. melting and shov. steel.....	\$7.00 to \$7.50
Borings and short turnings	4.50 to 5.00
Long turnings.....	4.00 to 4.50
No. 1 machinery cast.....	8.00 to 8.50
Automotive cast.....	11.00 to 11.50
Hydraul. comp. sheets....	7.00 to 7.50
Stove plate.....	5.50 to 6.00
New No. 1 busheling....	5.50 to 6.00
Old No. 2 busheling.....	2.50 to 3.00
Sheet clippings.....	4.00 to 4.50
Flashings.....	5.75 to 6.25

F.O.B. Warehouse Prices

(Less than 5000 Lb.)

Base per Lb.

	San Fran- cisco	Los Angeles	Seattle
Plates and struc. shapes, 1/4-in. and heavier.....	2.80c.	3.00c.	2.40c.
Soft steel bars....	2.80c.	3.00c.	2.40c.
Reinforcing bars....	2.80c.	2.80c.	3.00c.
Hot-rolled annealed sheets (No. 24)...	3.90c.	4.00c.	3.50c.
Hot-rolled sheets (No. 10).....	3.40c.	3.50c.	3.00c.
Galv. sheets (No. 24).....	4.40c.	4.20c.	3.85c.
Struc. rivets, 1/2 in. and larger, less than 1000 lb....	5.00c.	5.00c.	5.50c.
Special nails: common 4 to 60d; smooth box 4 to 20d; finish 6 and 8d; base per keg	\$2.55	\$2.45	\$2.45
Other wire nails, base per keg....	2.80	2.70	2.65
Cement c'd nails, 100-lb. keg.....	2.65	2.70	2.65

▲▲ Semi-Finished Steel, Raw Materials, Bolts and Rivets ▲▲

MILL PRICES OF SEMI-FINISHED STEEL

Billets and Blooms	
	Per Gross Ton
Rerolling, 4-in. and under 10-in., Pittsburgh	\$29.00 to \$30.00
Rerolling, 4-in. and under 10-in., Youngstown	29.00 to 30.00
Rerolling, 4-in. and under 10-in., Cleveland	29.00 to 30.00
Rerolling, 4-in. and under 10-in., Chicago	31.00 to 32.00
Forging quality, Pittsburgh.....	35.00

Sheet Bars	
	Per Gross Ton
(Open-Hearth or Bessemer)	
Pittsburgh	\$29.00 to \$30.00
Youngstown	29.00 to 30.00
Cleveland	29.00 to 30.00

Slabs	
	Per Gross Ton
(8 in. x 2 in. and under 10 in. x 10 in.)	
Pittsburgh	\$29.00 to \$30.00
Youngstown	29.00 to 30.00
Cleveland	29.00 to 30.00

Skelp	
	Per Lb.
(F.o.b. Pittsburgh or Youngstown)	
Grooved	1.60c. to 1.65c.
Universal	1.60c. to 1.65c.
Sheared	1.60c. to 1.65c.

Wire Rods	
	Per Gross Ton
(Common soft, base)	
Pittsburgh	\$35.00
Cleveland	35.00
Chicago	36.00

PRICES OF RAW MATERIAL

Ores	
	Per Unit
Lake Superior Ores, Delivered Lower Lake Ports	
Old range Bessemer, 51.50% iron.....	\$4.80
Old range non-Bessemer, 51.50% iron.....	4.65
Mesabi Bessemer, 51.50% iron.....	4.65
Mesabi non-Bessemer, 51.50% iron.....	4.50
High phosphorus, 51.50% iron.....	4.40
Foreign Ore, c.i.f. Philadelphia or Baltimore	
Iron ore, low phos., copper free, 55 to 58% iron, dry, Spanish or Algerian..	8c. to 9c.
Iron ore, low phos., Swedish, average 68% iron	10.00c.
Iron ore, basic or foundry, Swedish, average 65% iron	9.00c.
Iron ore, basic and foundry, Russian, average 63% iron.....	9.00c.
Manganese ore, washed 52% manganese, from the Caucasus.....	25c. to 27c.
Manganese ore, African or Indian, 50 to 52%	24c. to 26c.
Manganese ore, Brazilian, 46 to 48%	22c. to 24c.
Tungsten ore, high grade, per unit, in 60% concentrates.....	\$12.00 to \$12.50
Chrome ore, 45% Cr ₂ O ₃ crude, c.i.f. Atlantic seaboard	\$20.00
Chrome ore, 48% Cr ₂ O ₃ crude, c.i.f. Atlantic seaboard	22.50

Coke	
	Per Net Ton
Furnace, f.o.b. Connellsville prompt	\$2.40
Foundry, f.o.b. Connellsville prompt	\$3.25 to 4.50
Foundry, by-product, Ch'go ovens	7.50
Foundry, by-product, New England, del'd	10.50
Foundry, by-product, Newark or Jersey City, delivered.....	8.70 to 9.10
Foundry, by-product, Phila.....	9.00
Foundry, Birmingham.....	5.00
Foundry, by-product, St. Louis, f.o.b. ovens.....	8.00
Foundry, by-product, del'd St. Louis	9.00

Coal	
	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	\$1.40 to \$1.50
Mine run coking coal, f.o.b. W. Pa. mines	1.50 to 1.60
Gas coal, 3/4-in., f.o.b. Pa. mines.....	1.70 to 1.80
Mine run gas coal, f.o.b. Pa. mines.....	1.50 to 1.60
Steam slack, f.o.b. W. Pa. mines.....	.90 to 1.00
Gas slack, f.o.b. W. Pa. mines.....	1.00 to 1.10

Ferromanganese	
	Per Gross Ton
Domestic, 80%, seaboard.....	\$80.00 to \$85.00
Foreign, 80%, Atlantic or Gulf port, duty paid.....	*80.00 to 85.00

*Minimum price quoted for lots of 2000 tons or more.

Spiegeleisen	
	Per Gross Ton Furnace
Domestic, 19 to 21%	\$28.00 to \$30.00

Electric Ferrosilicon	
Per Gross Ton Delivered	
50%	\$83.50
75%	130.00
Per Gross Ton	Per Gross Ton
Furnace	Furnace
10%	\$35.00
11%	37.00
12%	\$39.00
14 to 16%	31.00

Bessemer Ferrosilicon	
	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace	
10%	\$25.00
11%	26.00
12%	27.00

Silvery Iron	
	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace	
6%	\$19.00 to \$21.00
7%	19.50 to 21.50
8%	20.00 to 22.00
9%	20.50 to 22.50
10%	21.00 to 23.00

Delivered prices at Chicago are about 50c. a ton below this schedule.

Other Ferroalloys	
	Per Gross Ton
Ferrotungsten, per lb. contained metal del'd, carloads	\$1.08
Ferrotungsten, less carloads.....	\$1.15 to 1.25
Ferrocromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads.....	11.00c.
Ferrocromium, 2% carbon.....	17.00c. to 17.50c.
Ferrocromium, 1% carbon.....	19.00c. to 20.00c.
Ferrocromium, 0.10% carbon.....	24.50c. to 26.00c.
Ferrocromium, 0.06% carbon.....	26.50c. to 28.00c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace.....	\$3.15 to \$3.65
Ferrocobalt, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$160.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base per gross ton.....	91.00
Ferromolybdenum, per lb. contained Mo., delivered	1.00
Calcium molybdate, per lb. contained Mo., delivered.....	85c.

Fluxes and Refractories	
	Per Net Ton
Ferrophosphorus, electric, 24%, f.o.b. An-niston, Ala., per gross ton.....	\$122.50
Silico spiegel, per ton, f.o.b. furnace, car lots	42.50
Ton lots or less, per ton.....	47.50
Silico-manganese, gross ton, delivered:	
2.50% carbon grade.....	105.00
1% carbon grade.....	115.00
Spot prices	\$5 a ton higher

Fluorspar	
	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silicon, gravel, f.o.b. Illinois and Kentucky mines.....	\$14.00
No. 2 lump, Illinois and Kentucky mines..	17.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic port, duty paid	17.00
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2 1/2% silicon, f.o.b. Illinois and Kentucky mines.....	\$2.50

Fire Clay Brick	
	Per 1000 f.o.b. Works
High-Heat Intermediate Duty Brick Heavy Duty Brick	
Pennsylvania	\$40.00 to \$43.00 \$32.00 to \$35.00
Maryland	40.00 to 43.00 32.00 to 35.00
New Jersey	40.00 to 43.00
Ohio	40.00 to 43.00 32.00 to 35.00
Kentucky	40.00 to 43.00 32.00 to 35.00
Missouri	40.00 to 43.00 32.00 to 35.00
Illinois	40.00 to 43.00 32.00 to 35.00
Ground fire clay, per ton.....	6.50

Silica Brick	
	Per 1000 f.o.b. Works
Pennsylvania	\$45.00
Chicago	49.00
Birmingham	47.00
Silica clay, per ton.....	8.00

Magnesite Brick	
	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00

Chrome Brick	
	Per Net Ton
Standard size.....	\$45.00

MILL PRICES OF BOLTS, NUTS, RIVETS AND SET SCREWS

Bolts and Nuts	
	Per Cent Off List
(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)	
Machine bolts.....	73 and 10
Carriage bolts.....	73 and 10
Lag bolts.....	73 and 10
Plow bolts, Nos. 1, 2, 3 and 7 heads.....	73 and 10
Hot-pressed nuts, blank or tapped, square, 73 and 10	73 and 10
Hot-pressed nuts, blank or tapped, hexagons, 73 and 10	73 and 10
C.p.c. and t. square or hex. nuts, blank or tapped	73 and 10
Washers*	7.00c. to 6.75c. per lb. off list

*F.o.b. Chicago, New York and Pittsburgh.
†Bolts with rolled thread up to and including 3/8 in. x 6 in. take 10 per cent lower list prices.

Bolts and Nuts	
	Per Cent Off List
Semi-finished hexagons nuts.....	73 and 10
Semi-finished hexagons castellated nuts, S.A.E., 73 and 10	73 and 10
Stove bolts in packages, P'gh. .80, 10, 10, 10 and 5	73 and 10
Stove bolts in packages, Ch'go. 80, 10, 10, 10 and 5	73 and 10
Stove bolts in pkgs., Cleveland. 80, 10, 10, 10 and 5	73 and 10
Stove bolts in bulk, P'gh. .80, 10, 10, 10, 5 and 2 1/2	73 and 10
Stove bolts in bulk, Ch'go. 80, 10, 10, 10, 5 and 2 1/2	73 and 10
Stove bolts in bulk, Cleveland, 80, 10, 10, 10, 5 and 2 1/2	73 and 10
Tire bolts.....	60, 10 and 10
Discounts of 73 and 10 per cent off on bolts and nuts apply on carload business with jobbers and large consumers.	

Large Rivets	
	Base per 100 Lb.
(1/2-in. and larger)	
F.o.b. Pittsburgh or Cleveland.....	\$2.75
F.o.b. Chicago	2.85

Small Rivets	
	Per Cent Off List
(7/8-in. and smaller)	
F.o.b. Pittsburgh.....	70, 10 and 5
F.o.b. Cleveland.....	70, 10 and 5
F.o.b. Chicago	70, 10 and 5

Cap and Set Screws	
	Per Cent Off List
(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)	
Milled cap screws.....	80, 10, 10 and 5
Milled standard set screws, case hardened, 80 and 5	80 and 5
Milled headless set screws, cut thread.....	75 and 10
Upset hex. head cap screws, U.S.S.S. thread, 85 and 10	85 and 10
Upset hex. cap screws, S.A.E. thread.....	80, 10 and 5
Upset set screws.....	80, 10 and 5
Milled studs.....	70

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Non-Ferrous Metal Markets

Custom Smelter Sales Set Copper Price—Tin Up On Curtailment of Output

NEW YORK, Aug. 4.

COPPER

Primary producers are maintaining a minimum of 8c. a lb., delivered Connecticut Valley, on electrolytic copper, which is equivalent to being out of the market, as custom smelters have been quoting 7.50c. to 7.75c. a lb., delivered, until today, when the market stiffened slightly to 7.75c., delivered. At no time during the week was a substantial amount of copper available at the lower quotation, and transactions aggregated a small tonnage. The export quotation was reduced today to 8c. a lb., c.i.f. usual European ports, by Copper Exporters, Inc., which is on a basis of 7.75c., delivered, in the domestic market. With the primary producers maintaining 8c., delivered, as a domestic price, they are out of export selling, sales abroad being limited at present to the custom smelters which are members of Copper Exporters. Sales to foreign users have been small, totaling only about 1500 tons since Aug. 1, and about 17,500 tons in all of July. While there is discussion of a probable meeting of copper producers early this fall to consider the subject of overproduction, considerable doubt is expressed that any agreement can be reached. Meanwhile, it is believed in certain quarters that further individual limitations of production will develop among producers if the present price level continues. In the Lake copper industry, the Quincy Mining Co. has suspended operation from Aug. 1 to Sept. 8. Prices of Lake copper continue at 8c. to 8.12½c. a lb., delivered, the minimum quotation being for the low conductivity grade. In THE IRON AGE quotation for July 22 to 28, the lower-grade price was used instead of 8.12½c.

COPPER AVERAGES

The average price of Lake copper based on daily quotations in THE IRON AGE, is 8.39c. a lb. for July, delivered New York. The average price of electrolytic copper is 7.67c., refinery, or 7.92c., delivered in the Connecticut Valley.

TIN

The domestic market has registered minor fluctuations during the week, moving up slightly, principally on active buying by one dealer for August delivery. On Monday the price advanced to 24.50c. a lb., and today

THE WEEK'S PRICES. CENTS PER POUND FOR EARLY DELIVERY

	Aug. 4	Aug. 3	Aug. 1	July 31	July 30	July 29
Lake copper, New York.....	8.12½	8.12½	8.12½	8.12½	8.12½	8.12½
Electrolytic copper, N. Y.*.....	7.50	7.25	7.25	7.37½	7.37½	7.50
Straits tin, spot, N. Y.	24.80	24.50	...	24.25	24.15	24.25
Zinc, East St. Louis.....	3.85	3.85	3.85	3.85	3.85	3.87½
Zinc, New York.....	4.20	4.20	4.20	4.20	4.20	4.22½
Lead, St. Louis.....	4.22½	4.22½	4.22½	4.22½	4.22½	4.22½
Lead, New York.....	4.40	4.40	4.40	4.40	4.40	4.40

*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

Aluminum, 98 to 99 per cent pure, 22.90c. a lb., delivered.
Nickel, electrolytic cathode, 35c. a lb., delivered; shot and ingot, 36c. a lb., delivered.
Antimony, 6.65c. a lb., New York.

was 24.80c. The latest increase in the quotation reflects an advance of £2 17s. 6d. in the London market for spot standard. This improvement in London was caused largely by the announcement that the Eastern Smelting Co. at Singapore is closing for part of August to permit stock inventory and general overhauling of the plant and equipment. Another factor contributing to better sentiment has been a further reduction of stocks in British warehouses by 163 tons to a total of 31,636 tons. The total visible supply of the metal showed an increase of only 81 tons in July. Carry-over of Straits tin stocks was reduced by 570 tons in July to 6632 tons. Straits tin production in July was 7071 tons and shipments to the end of the month 7641 tons. Estimated production for August is placed considerably lower than in July, with the Eastern interest closing for part of the month. August shipments of

Straits tin are expected to be about 5500 tons. Deliveries of tin into consumption in the United States during July totaled 5000 tons on the Atlantic Coast and 100 tons on the Pacific Coast. As a result of the economic situation in Germany, British tin in German warehouses is reported being withdrawn and shipped elsewhere, especially to the United States. Spot standard is now quoted at £110 17s. 6d., future standard at £113 5s. and spot Straits tin at £112 2s. 6d. The Singapore price today was £114 15s.

LEAD

Prices are steady at 4.22½c., St. Louis, and 4.40c., New York, the active buying movement of June having in general satisfied consumers' requirements well into August. As yet, buyers have exhibited little interest in forward delivery, but some business for September shipment is expected shortly. Not only were shipments in

New York, Chicago or Cleveland Warehouse

Delivered Prices, Base per Lb.

High brass	15.50c.
*Copper, hot rolled, base sizes.....	17.87½c.
Seamless Tubes—	
Brass	20.37½c.
Copper	20.37½c.
Brass Rods	13.75c.
Brazed Brass Tubes.....	24.37½c.

*Extra for cold-rolled, 3c. per lb.

New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks 9.25c. to 9.50c.
Zinc sheets, open.....10.25c. to 10.50c.

Metals from New York Warehouse

Delivered Prices, per Lb.

Tin, Straits pig.....	27.00c. to 28.00c.
Tin, bar	29.00c. to 31.00c.
Copper, Lake	10.00c. to 11.00c.
Copper, electrolytic	9.50c. to 10.00c.
Copper, casting	9.25c. to 9.75c.
Zinc, slab	5.00c. to 5.50c.
Lead, American pig.....	5.25c. to 6.25c.
Lead, bar	7.00c. to 8.00c.
Antimony, Asiatic	9.50c. to 10.50c.
Aluminum No. 1 ingots for remelting (guaranteed over 99% pure).....	20.00c. to 22.00c.
Alum. ingots, No. 12 alloy	19.00c. to 21.00c.
Babbitt metal, commercial grade	20.00c. to 30.00c.
Solder, ½ and ¼.....	17.50c. to 18.50c.

Metals from Cleveland Warehouse

Delivered Prices, per Lb.

Tin, Straits pig.....	29.50c.
Tin, bar	31.50c.
Copper, Lake	9.13c.
Copper, electrolytic	8.62½c.
Copper, casting	8.50c.
Zinc, slab	5.50c. to 5.75c.
Lead, American pig.....	5.25c.
Lead, bar	7.75c.
Antimony, Asiatic	10.00c.
Babbitt metal, medium grade.....	15.00c.
Babbitt metal, high grade.....	34.00c.
Solder, ½ and ¼.....	19.00c.

Old Metals, Per Lb., New York

Buying prices represent what large dealers are paying for miscellaneous lots from smaller accumulators and selling prices are those charged consumers after the metal has been properly prepared for their uses. (All prices are nominal because of uncertain condition of market.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	6.00c.	6.75c.
Copper, hvy. and wire	5.75c.	6.50c.
Copper, light and bottoms	4.75c.	5.50c.
Brass, heavy.....	3.25c.	4.00c.
Brass, light.....	2.50c.	3.50c.
Hvy. machine composition	4.75c.	5.50c.
No. 1 yel. brass turnings	3.50c.	4.25c.
No. 1 red brass or compos. turnings..	4.25c.	5.00c.
Lead, heavy	3.25c.	3.75c.
Zinc	1.50c.	2.00c.
Sheet aluminum.....	9.25c.	11.25c.
Cast aluminum.....	3.50c.	5.50c.

June in excess of production, thereby reducing stocks, but July figures are expected to show a further decline in lead stocks, resulting in greater firmness in the market. Production statistics for the first half of this year, compiled by the American Bureau of Metal Statistics give the world output as 807,424 tons of lead, of which the United States furnished 230,369 tons.

ZINC

Quotations are unchanged at 3.85c. a lb., East St. Louis, and 4.20c., New York, for spot shipment. Producers are quoting 3.90c., St. Louis, for Sep-

tember delivery, but consumers have not as yet shown much interest in future business. Reports of zinc stocks available at the end of July are expected to show a slight decline, and as a result a firmer market would not be unlikely.

ANTIMONY

The quotation for Chinese metal has settled to 6.65c. a lb., c.i.f. New York, duty paid, for spot shipment, and buying is as small as at any time this year. Future delivery is generally quoted by importers at 6.50c., c.i.f., duty paid, but consumers are not interested in forward buying.

FABRICATED STRUCTURAL STEEL

New Projects of 32,500 Tons Include 20,000-Ton New York Terminal—Awards Only 14,500 Tons

FABRICATED structural steel awards and new projects register a decline this week, with only 32,500 tons of new work, compared with 55,000 tons a week ago, and 14,500 tons of awards, the smallest since the end of April. Most of the week's total of new business is contributed by the Inland Terminal in New York for the Port of New York Authority, requiring 20,000 tons. The only other inquiries of consequence are a warehouse in Albany, 1000 tons, and an Economics Building at Ithaca, N. Y., for Cornell University, 1000 tons.

Awards include 2500 tons for a coal breaker at St. Nicholas, Pa., 2000 tons in the electrical group of buildings at the Chicago World's Fair, and 1000 tons for juvenile court buildings in Cleveland. Awards follow:

North Atlantic States

BUCKSPORT, ME., 525 tons, State bridge, to American Bridge Co.
BOSTON, 325 tons, section B, East Boston tunnel, to Carnegie Steel Co.
BOSTON, 300 tons, elevated station at Charles and Cambridge Streets, to New England Structural Co.
BELCHERTOWN, MASS., 250 tons, State water diversion tunnel, to a New Jersey fabricator.
WALTHAM, MASS., 125 tons, standpipe, to Pittsburgh-Des Moines Steel Co.
PLYMOUTH, N. H., 100 tons, library addition, to Lyons Iron Works, Manchester, N. H.
BRISTOL, CONN., 175 tons, telephone building, to McClintic-Marshall Corp.
NEW YORK, 491 tons, church and office building on Warren Street, to McClintic-Marshall Corp.
BLOOMFIELD, N. J., 583 tons, school, to Passaic Steel & Iron Co.
PENNSYLVANIA RAILROAD, 613 tons, bridges at Pittsburgh and Chicago, to McClintic-Marshall Corp.
PENNSYLVANIA RAILROAD, 212 tons, bridge at Lancaster, Pa., to American Bridge Co.
MIDDLETOWN, N. Y., 200 tons, State hospital building, awarded by F. W. Mark Construction Co., Philadelphia, to Shippers' Car Line.
KEARNY, N. J., 400 tons, Public Service Electric & Gas Co., to Jones & Laughlin Steel Corp.
ST. NICHOLAS, PA., 2500 tons, coal breaker for Philadelphia & Reading Coal & Iron Co., to American Bridge Co.
BUFFALO, 500 tons, addition to Buffalo General Hospital, to R. S. McMannus Steel Construction Co.

The South

MIAMI, FLA., 200 tons, Hialeah race track, to Ingalls Iron Works.
HOUSTON, TEX., 142 tons, highway bridge for Houston County, to McClintic-Marshall Corp.

Central States

CLEVELAND, 1000 tons, juvenile court buildings, to Fort Pitt Bridge Works.
MELVINDALE, MICH., 173 tons, grade separation work, to Mahon Structural Steel Co.
WARASH RAILROAD, 195 tons, bridge at Springfield, Ill., to Mississippi Valley Structural Steel Co.
CHICAGO, 2000 tons, electrical group for World's Fair, to Gage Structural Steel Co.
MASON CITY, IOWA, 500 tons, power house for State College, to Iowa Steel & Iron Co.
ADEL, IOWA, 215 tons, bridge, to Des Moines Steel Co., previously reported to Pittsburgh-Des Moines Steel Co.
COLUMBUS, NEB., 650 tons, bridge, to Omaha Steel Works.

Western States

APACHE COUNTY, ARIZ., 223 tons, Rio Puerce bridge for United States Bureau of Public Roads, to Virginia Bridge & Iron Co.
SAN FRANCISCO, 200 tons, Girls High School additions, to Herrick Iron Works.
SAN DIEGO, 1000 tons, Broadway Municipal Pier, to Virginia Bridge & Iron Co.
VALLEJO, CAL., 200 tons, pipe warehouse, at Mare Island Navy Yard, to Golden Gate Iron Works.
LOS ANGELES, 250 tons, additional ma-

terial for Cord Building, to McClintic-Marshall Corp.

LA VERNE, CAL., 111 tons, packing house for La Verne Lemon Association, to Consolidated Steel Co.

SAN FRANCISCO, 210 tons, Southern Pacific bridge, to Virginia Bridge & Iron Co.

STRUCTURAL PROJECTS PENDING

Inquiries for fabricated steel work include the following:

North Atlantic States

STEWARTSTOWN, N. H., 170 tons, almshouse.
NEW YORK, 20,000 tons, Inland Terminal No. 1, between Thirteenth and Sixteenth Streets and Eighth and Ninth Avenues, for Port of New York Authority.
NEW YORK, 182 tons, garage at 416 East 181st Street for city.
NEW YORK, 117 tons, garage on Webster Avenue for city.
NEW YORK, 1085 tons, public school No. 236 requiring 390 tons, Agostini Brothers, New York, low bidder for general contract; public school No. 248, requiring 695 tons, Major Engineering Co., New York, low bidder for general contract.
NEW YORK, 2000 tons, vocational school in Borough of Richmond; low bidder for general contract, Royal Rice Co., Inc., New York.
HASTINGS, N. Y., 700 tons, elementary and high school.
ALBANY, N. Y., 1000 tons, warehouse for Albany Port District.
ITHACA, N. Y., 1000 tons, Economics Building for Cornell University.
STATE OF NEW YORK, 900 tons, highway bridges.
CAMDEN, N. J., 200 tons, city pier.

The South

STATE OF TEXAS, tonnage not stated, highway bridges.
NEW ORLEANS, upward of 25,000 tons, revised plans for combined railroad and highway bridge across Mississippi River; bids to be opened Sept. 15.

Central States

GRAND RAPIDS, MICH., 425 tons, Western Union building.
MILWAUKEE, 950 tons, Solomon Juneau High School; Worden-Allen Co., low bidder.
STATE OF MISSOURI, tonnage not stated, highway bridges.

Western States

KIMBERLY, NEV., 4000 tons, building for Consolidated Copper Co.
SAN FRANCISCO, 150 tons, Vernal Heights school.
LOS ANGELES, 400 tons, factory for Curtis Mfg. Co.
SAN FRANCISCO, 150 tons, apartment building at Pacific and Fillmore Streets.
YAKIMA, WASH., 500 tons, highway bridges over Yakima and Natches Rivers.
ALAMEDA, CAL., 2000 tons, bascule bridge over Oakland Estuary at Park Street.
SAN FRANCISCO, 300 tons, office building at Polk and McAllister Streets.
SACRAMENTO, 100 tons, filtration plant, Western Foundation Co., Richmond, Cal., low bidder.

European Steel Consumers Restrict Buying During Financial Crisis

(By Cable)

LONDON, ENGLAND, Aug. 4.

CONTINENTAL iron and steel prices are lacking in strength and demand is at a low ebb with large consumers abstaining from buying during the present confused Central European financial situation. Certain mills are pressing for tonnage to maintain operations.

The meeting of the Continental Steel Cartel, which was postponed as a result of the financial crisis, is still being delayed, but the cartel has been provisionally extended to the end of September.

The Japan Steel Export Co. of Calcutta has booked Japan's first gas tube contract in India, consisting of 65,000 ft. of galvanized and 50,000 ft. of black pipe for July-August shipment. The order was taken at about 5 per cent under the scheduled prices of the European cartel.

In Austria the Alpin Montan Gesellschaft is negotiating with the Government for payment of a subsidy to avert closing its mines and the Donawitz blast furnace.

A Merchant Bar Syndicate has been formed in France, effective for six months from July 25, with a minimum price on bars of 500 fr. (\$19.60) f.o.t. Thionville; open-hearth steel, 75 fr. (\$2.94) extra. The French Semi-Finished Steel Syndicate has been renewed to the end of 1932.

The British National Shipbuilders' Security Association has acquired eight more Northeast Coast shipyards for dismantling. Clyde shipbuilding

Japan sells first gas pipe to India, booking 115,000 ft. at 5 per cent under cartel schedule.

* * *

Clyde shipbuilders take only one new contract in July, and their security association acquires eight more yards for dismantling.

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Germany drops to sixth place as shipbuilding nation at end of June.

* * *

Soviet buys machinery and hardware in Poland and offers large order to Czechoslovakia.

* * *

World aluminum producers may hold conference in Europe at end of August.

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output in July was six vessels of 16,000 tons. Only one small new contract was placed during the month.

British market conditions are influenced by holiday conditions and Northeast and Midland plants are closed. In the Midlands, finished iron output in May and June was at the lowest level since 1928.

Tin plate is quiet, with mills closed for the annual week's stoppage. Galvanized sheets are inactive, but Japan has placed some small orders for thin-

gage black sheets, makers accepting the business at concessions in price.

Belgian production in June was 218,000 tons of pig iron, 264,000 tons of raw steel, and 200,000 tons of rolled steel.

Polish output in June was 103,000 tons of pig iron and 78,000 tons of rolled steel products including pipe. June exports of iron and steel totaled 41,000 tons, the bulk of the shipments going to the Soviet.

Italian production in June was 44,000 tons of pig iron, 131,000 tons of raw steel and 128,000 tons of rolled steel products.

Silesian Steel Works Negotiate Merger

BERLIN, GERMANY, July 21.—The entire German Silesian steel industry, headed by the Borsigwerke and the Vereinigte Oberschlesische Hüttenwerke, is negotiating for a merger. The consolidation is to include the old Prussian Government alloy steel works and certain hardware manufacturers. Formal announcement of the new combination is expected soon.

International Aluminum Conference in August

HAMBURG, GERMANY, July 22.—A preliminary conference of Continental, British, Canadian and Ameri-

British and Continental European Export Prices per gross ton, f.o.b. United Kingdom Ports, Hamburg and Antwerp with the £ at \$4.8665 (par)

British Prices, f.o.b. United Kingdom Ports

Ferromanganese, export.	£9 0s.			\$43.74
Billets, open-hearth....	4 17½	to	£5 7½s.	23.69 to \$26.12
Black sheets, Japanese specifications	10 0			48.66
Tin plate, per base box..	0 13½	to	0 13¾	3.25 to 3.31
				Cents a Lb.
Steel bars, open-hearth..	7 17½	to	8 7½	1.71 to 1.81
Beams, open-hearth....	7 7½	to	7 17½	1.60 to 1.71
Channels, open-hearth....	7 12½	to	8 2½	1.66 to 1.76
Angles, open-hearth....	7 7½	to	7 17½	1.60 to 1.71
Black sheets, No. 24 gage	8 5	to	8 10	1.79 to 1.84
Galvanized sheets, No. 24 gage	9 7½			2.03

Continental Prices, f.o.b. Antwerp or Hamburg

Foundry iron, 2.50 to 3.00 per cent sil., 1.00 per cent and more phos.	£2 8s.	to	£2 9s.	\$11.66 to \$11.91
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Billets, Thomas.....	£3 5s.	to	£3 6s.	\$15.80 to \$16.04
Wire rods, low C., No. 5 B.W.G.	4 15	to	5 0	23.09 to 24.30
Rails, light.....	6 0			29.20
Black sheets, No. 31 gage, Japanese.....	11 5	to	12 12	54.68 to 58.32
				Cents a Lb.
Steel bars, merchant....	3 9	to	3 10	0.74 to 0.76
Beams, Thomas, British standard (nominal)...	3 8½	to	3 10	0.74 to 0.76
Channels, Thomas, American sections	5 12	to	5 14	1.24 to 1.26
Angles, Thomas, 4-in. and larger, over ¾-in. thick	3 8	to	3 9	0.74 to 0.75
Angles, Thomas, 3-in....	3 10½	to	3 11	0.76 to 0.77
Hoops and strip steel over 6-in. base.....	4 5			0.94
Wire plain, No. 8 gage..	5 0	to	5 1¼	1.09 to 1.10
Wire, barbed, 4-pt. No. 12 B.W.G.	8 10			1.87

can producers of aluminum is expected about the end of August. Participants will probably consider the formation of an international aluminum cartel, but successful establishment of such an association with all producers as members is considered doubtful.

Ford to Build Plant at Mexico City

MEXICO CITY, July 30.—The Ford Motor Co. announced here today that work would be commenced immediately upon an assembly plant to cost \$1,500,000. The new plant is to be completed within nine months and is to have a capacity of 100 cars daily.

Dutch Join Shipping-Conference

HAMBURG, GERMANY, July 22.—Dutch shipping lines have finally become members of the East Asia shipping conference, and the low freight rates to the Far East, which have been in effect for some months, are expected to terminate.

Soviet Buys Motor Trucks in Germany

HAMBURG, GERMANY, July 15.—The Soviet Union is pursuing a policy of ordering heavy motor trucks in Germany, and has just placed a contract with the Friedrich Krupp A. G., Essen, for 200 motor trucks. This brings the total of Soviet orders with three German makers to 650 trucks.

Operations of German Machinery Trade Decline

HAMBURG, GERMANY, July 22.—Foreign demand for machinery has declined about 12 per cent and domestic buying is off about 61 per cent from 1930, according to a statement of the Federation of German Machinery Manufacturers. The German machinery building industry as a whole is operating at 43.5 per cent, compared with about 53 per cent at this time last year. While export trade has recently shown slight improvement, domestic demand is registering a further decline.

Soviet Buys Machinery From Poland

HAMBURG, GERMANY, July 22.—Soviet buying in Poland continues heavy. In the past week Polish manufacturers of machinery and hard-

ware have booked Russian orders valued at \$870,000. Soviet orders for machinery and hardware totaling \$5,900,000 have been offered to Czechoslovakian companies, but have not yet been accepted because of the credit terms. Included in these contracts was complete equipment for a tube mill.

Germany in Sixth Place as Shipbuilding Nation

HAMBURG, GERMANY, July 22.—German shipyards, which have ranked second only to the British in tonnage under construction during the past 10 years, have fallen to sixth place. From 203,546 tons of ship construction on hand at the end of last December, there was a decline to 135,391 tons at the end of March and to 91,365 tons at the end of June. As the tonnage in yards is continuing to decrease, with no new business being booked, most German shipyards will probably be forced to close soon.

Russian Exports Depress Manganese Prices

World manganese prices, which have been almost continuously downward for the past two years, continue to be adversely affected by the decrease in steel production in virtually all countries of the world, according to a review of the current international manganese situation by the Commerce Department's Minerals Division.

Russia, holding a leading position with reserves of high-grade ores estimated to be greater than those of any other country, has consistently increased its annual output in recent years, and many of the large consumers of manganese ore have covered their requirements for 1931 through negotiations with Russian distributors.

Brazil's decline in annual output during the past few years (359,651 metric tons in 1928, 316,172 in 1929 and 203,564 in 1930), as well as a comparable decrease in exports (from 361,829 tons in 1928 to 293,318 in 1929 and 192,122 in 1930) may be attributed definitely to the competition and lower prices offered by Russia. India's trade likewise declined for the same reason, exports dropping from 681,153 tons in 1928 and 814,944 in 1929 to 617,930 tons in 1930. Several Indian mines have ceased operations during the past year.

Of all the manganese producers, the Gold Coast has best maintained its position in competition with Russia. In 1930 exports from the Gold Coast of about 417,970 tons showed a decrease of about 1730 tons from 1929. In the same year the United States became the second best purchaser of Gold Coast manganese, with Norway first, Canada third and France fourth.

France, whose total annual output of steel is but from one-fourth to one-third of the United States production, has consistently imported from 15 to 20 per cent more manganese ore than the United States. United States production of manganese amounted to 69,373 metric tons in 1930, compared with 63,701 in 1929 and 49,159 in 1928, while France is a non-producer.

Chile a Good Market for Iron and Steel

In spite of world-wide bad economic conditions Chile has shown an increase, until the past few months, in its importation of iron and steel products. The total in 1930 was almost 250,000 tons, representing a gain of more than 15 per cent over 1929. A report from the American Trade Commissioner in Santiago places Chile as the leader of all the South American countries in 1930 in taking iron and steel products from the United States, and states that the Chilean importations were in second position in 1929.

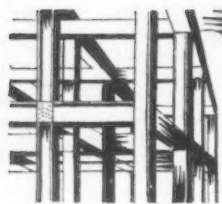
While there is no large metal-working industry in Chile, there are a number of small manufacturers of such items as nails, bolts, spikes, window frames, doors, railings, railroad splice bars and small iron and steel fixtures and fittings. The Manufacturers' Association includes in its membership about 150 foundries, shops and metal-working plants, a number of which are said to be well equipped with metal-working machine tools.

Chilean imports vary markedly from year to year with the progress of local improvements. What is lost in one commodity in any year appears to be made up by larger takings of other commodities. The table shows in metric tons the 1930 and 1929 imports of the principal iron and steel items.

It will be noted that there were large increases in 1930 in steel rails, track steel, structural shapes and pipe and boiler tubes. Some of these items more than doubled the preceding year's total. Principal among the declines from 1929 to 1930 were in pig iron and in wheels, axles and tires.

Chilean Imports of Iron and Steel Products

(In Metric Tons of 2205 Lb.)		
	1930	1929
Pig iron.....	5,839	7,809
Steel rails.....	46,929	32,923
Bars, iron and steel...	77,826	81,901
Structural shapes....	13,968	6,218
Sheets, iron and steel.	31,869	32,225
Sheets, corrugated...	3,379	2,976
Tin plate.....	9,615	8,642
Pipe and boiler tubes.	27,646	14,455
Wire and manufac-		
tures.....	2,355	2,275
Track steel.....	5,643	2,782
Bolts, nails, rivets, etc.	3,968	2,292
Wheels, axles and tires	3,412	4,596
Cast iron pipe.....	13,323	13,359
Miscellaneous.....	958	323
Total.....	246,750	213,776
Import value, United States currency (thousands).....	\$16,062	\$14,171



PLANT EXPANSION AND EQUIPMENT BUYING



Machine Tool Trade Poorest in Years

July Brought Little Business, and August Is Not Expected To Be Any Better

THE machine tool industry is experiencing the smallest volume of business in years. July was the low point of the year and perhaps also the low point of the depression thus far for many companies, though it is not expected that August will turn out to be any better. The influences upon business psychology during the past month have been mostly negative, and the extreme heat throughout the country has added to the general lassitude.

In the absence of convincing signs

of a general turn in business, the machine tool trade is not hopeful of any improvement this month, but continues to look for some change for the better by September.

New England, which is one of the brightest spots in the country, owing to the improved conditions in the textile and shoe industries, is experiencing a mild revival of interest in machine tools, which, however, is reflected only in inquiries and not in orders.

In the New York market the only

outstanding business is the prospective order for 17 lathes and a few other tools for the Brooklyn Navy Yard, on which bids were taken a few weeks ago.

An automobile manufacturer in the Chicago district is said to have ordered 40 gear hobbing machines.

Most of the current orders are for single tools, and the purchases are dictated usually by a desire to meet new competitive conditions through cutting of unit costs of production,

NEW YORK

Inquiries are limited to single tools, and in most cases prospective buyers are inclined to delay purchases until fall. In addition to 17 lathes, on which the Navy Department recently took bids, the department will shortly place one large turret lathe, inquired for separately. With the larger users of machine tools in this district showing little interest in buying, no increase in demand for equipment is expected until after Labor Day.

NEW ENGLAND

Due to excessive heat, causing many metal-working plants to curtail operations, some machine tool dealers report no developments the past week. Others, however, have had a noticeable increase in new inquiries and negotiations with prospective buyers have quickened to some extent. It is apparent that at least certain buyers plan to place orders in August instead of September, as previously indicated. Common opinion in local circles is that the final quarter of 1931 will result in much improved business. Sales of small tools have been good.

MILWAUKEE

While August business is expected to be rather light, the month should develop a somewhat larger volume

than either June or July, with September marking a definite upturn, according to local opinion. Production is increasing slowly, and payrolls are making small but gratifying gains. A manufacturer of radio parts has been able to bring the plant to nearly capacity the past fortnight because of large orders from some of the principal manufacturers of receiving sets. Inquiry from the automotive industries continues to improve and shops making highly specialized tools already are getting some orders from that source.

CHICAGO

Machine tool dealers are somewhat at variance in opinions as to the course of business, though the recent upturn in buyers' interest is still a favorable factor. Sales in the closing days of July raised some order books so that the month was lifted from the low point of the year—a position which it had seemed destined to occupy. An order has been placed for four presses and an automobile manufacturer is said to have bought 40 gear hobbing machines. Some new equipment now being ordered is for changes in design of products, but it is noticeable that many machine tool users are starting programs to better meet new competitive conditions. Studebaker Corp. is said to be retooling and has

scrapped a large number of old machines. The used machine tool market is more active.

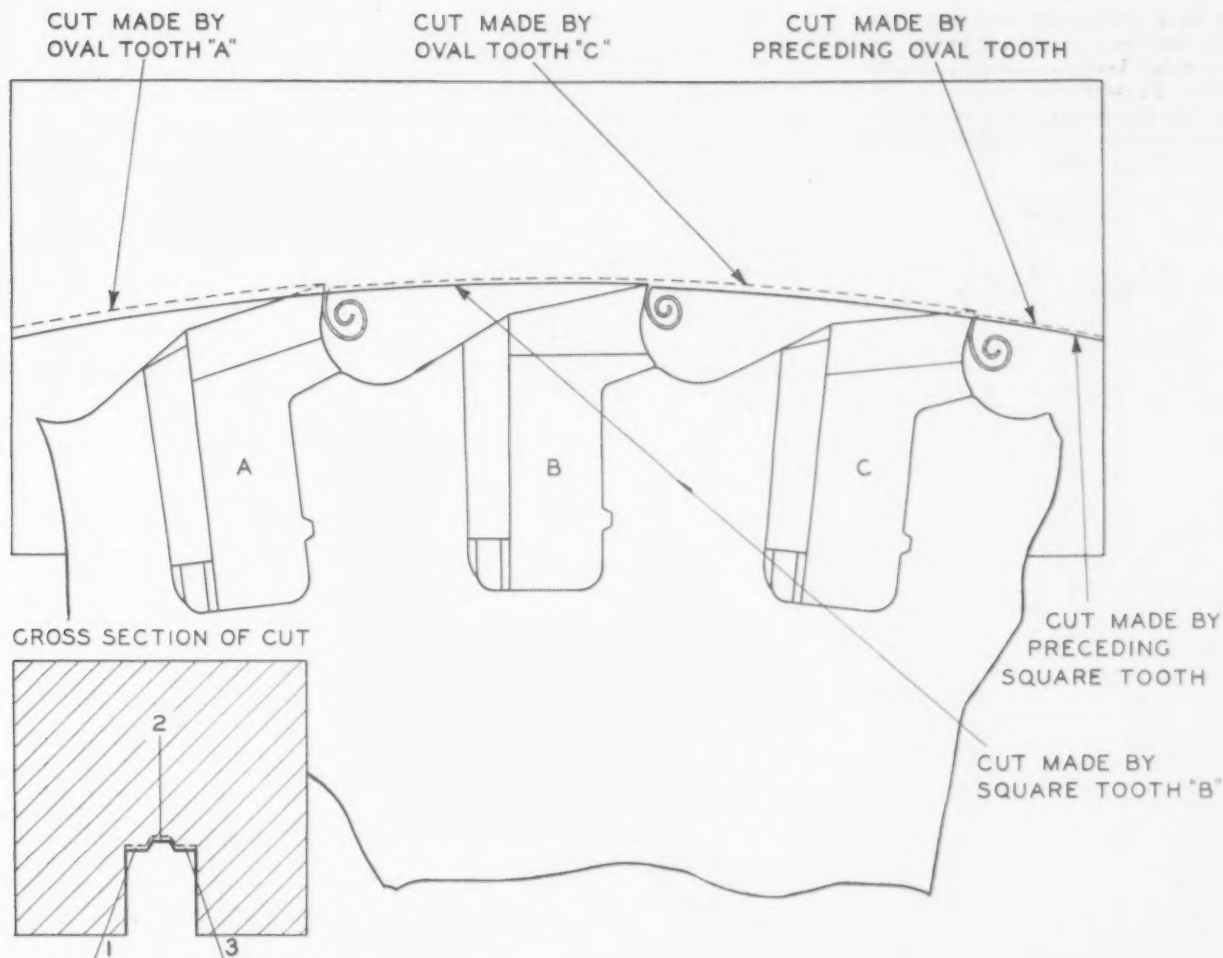
CINCINNATI

Demand is made up entirely of small and infrequent orders for one or two tools and represents the most urgent needs of users. The vacation season has added somewhat to the market quiet, and manufacturers do not expect much improvement before early fall. Production, however, continues at about 35 per cent of normal. Inquiry has lessened.

PITTSBURGH

Following one of the poorest months in the history of the industry, the machine tool trade in this district is looking forward to little improvement in August. One or two dealers report a slight increase in new inquiries, but orders show no gain and most of the business coming out is the result of missionary work on the part of salesmen. A small amount of business from manual training departments of high schools in the Pittsburgh locality is in prospect.

While builders of heavy machinery and equipment still have a fair backlog of orders, most of them are complaining about the failure of steel companies to place business. However, some makers of steel mill equip-



FACTS ABOUT SIMONDS "RED STREAK" INSERTED TOOTH METAL SAW

Accompanying sketch is a picture of the saw in action showing oval and square teeth. The oval teeth are slightly longer than the square teeth and cut a groove one-third the width of the kerf. The square teeth cut the other two-thirds, one-third each side of the central cut. The groove cut by the oval teeth being deep enough so that chips cut by the square teeth are in two pieces and easily clear the cutting corners of the square teeth by working toward the center, instead of rubbing and sticking on the sides of the teeth as in the case with a saw using all square teeth. It will cut easier, using less power and stay sharp longer.

Notice the circular gullet from the cutting edge of the tooth straight down $5/32$ " on a line pitched 12

degrees back of the center. At this point the gullet begins to curve very gradually for a short distance. The chip follows this curve easily and naturally, carrying it out of the gullet without sticking and filling up or carrying around into the cut again, which has caused more trouble from broken teeth and saws than all other difficulties encountered.

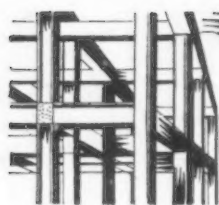
We make this saw in five sizes. For cutting the largest heavy-duty work to the smallest lighter work, where economy of material is particularly desired. We shall be glad to cooperate with you in your metal cutting problems. Write us giving full data and we will recommend the correct saw for your work.

SIMONDS SAW and STEEL CO.

ESTABLISHED 1832

"The Saw Makers"

FITCHBURG, MASS.



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than either June or July, with September marking a definite upturn, according to local opinion. Production is increasing slowly, and payrolls are making small but gratifying gains. A manufacturer of radio parts has been able to bring the plant to nearly capacity the past fortnight because of large orders from some of the principal manufacturers of receiving sets. Inquiry from the automotive industries continues to improve and shops making highly specialized tools already are getting some orders from that source.

CHICAGO

Machine tool dealers are somewhat at variance in opinions as to the course of business, though the recent upturn in buyers' interest is still a favorable factor. Sales in the closing days of July raised some order books so that the month was lifted from the low point of the year—a position which it had seemed destined to occupy. An order has been placed for four presses and an automobile manufacturer is said to have bought 40 gear hobbing machines. Some new equipment now being ordered is for changes in design of products, but it is noticeable that many machine tool users are starting programs to better meet new competitive conditions. Studebaker Corp'n. is said to be retooling and has

scrapped a large number of old machines. The used machine tool market is more active.

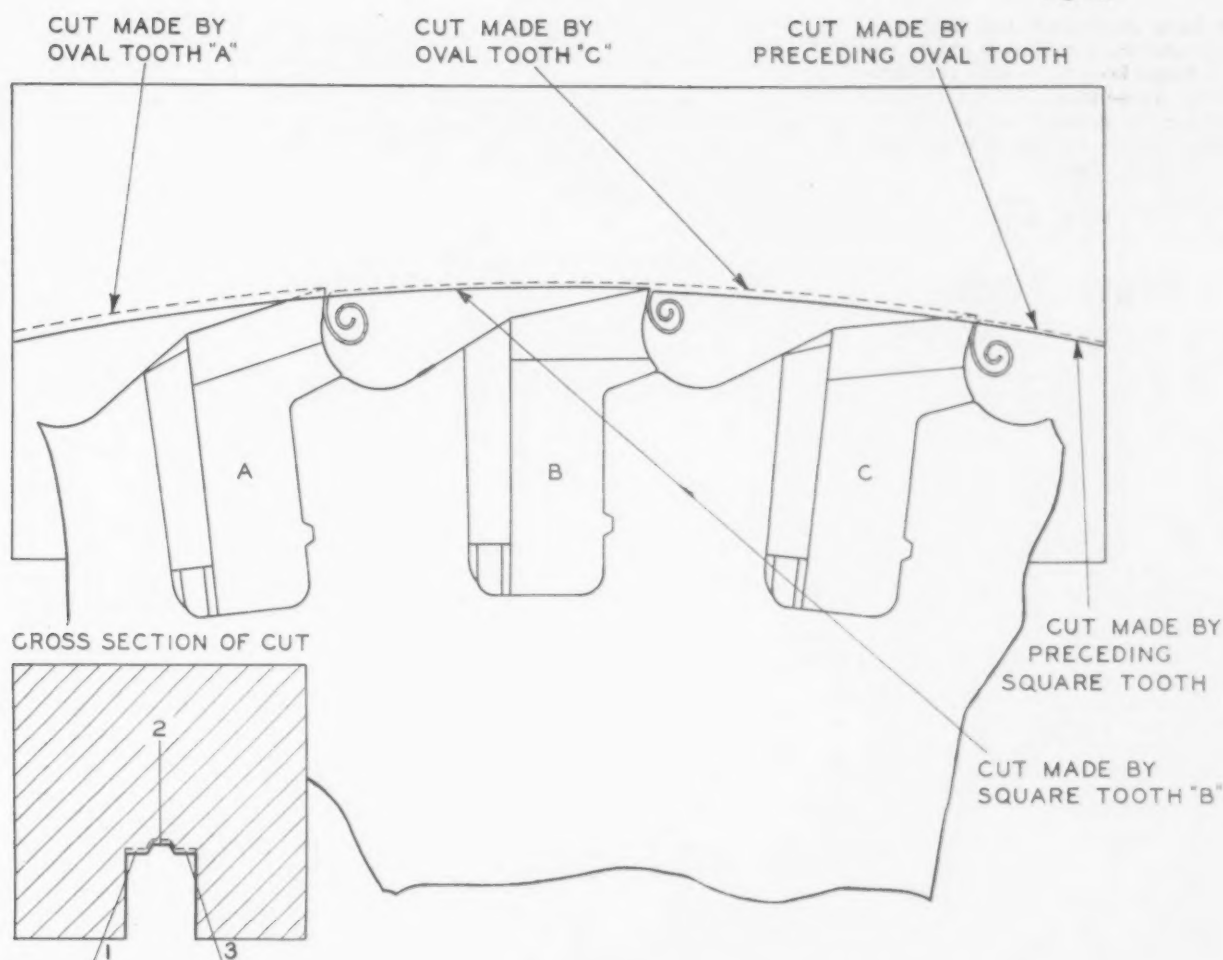
CINCINNATI

Demand is made up entirely of small and infrequent orders for one or two tools and represents the most urgent needs of users. The vacation season has added somewhat to the market quiet, and manufacturers do not expect much improvement before early fall. Production, however, continues at about 35 per cent of normal. Inquiry has lessened.

PITTSBURGH

Following one of the poorest months in the history of the industry, the machine tool trade in this district is looking forward to little improvement in August. One or two dealers report a slight increase in new inquiries, but orders show no gain and most of the business coming out is the result of missionary work on the part of salesmen. A small amount of business from manual training departments of high schools in the Pittsburgh locality is in prospect.

While builders of heavy machinery and equipment still have a fair backlog of orders, most of them are complaining about the failure of steel companies to place business. However, some makers of steel mill equip-



FACTS ABOUT SIMONDS "RED STREAK" INSERTED TOOTH METAL SAW

Accompanying sketch is a picture of the saw in action showing oval and square teeth. The oval teeth are slightly longer than the square teeth and cut a groove one-third the width of the kerf. The square teeth cut the other two-thirds, one-third each side of the central cut. The groove cut by the oval teeth being deep enough so that chips cut by the square teeth are in two pieces and easily clear the cutting corners of the square teeth by working toward the center, instead of rubbing and sticking on the sides of the teeth as in the case with a saw using all square teeth. It will cut easier, using less power and stay sharp longer.

Notice the circular gullet from the cutting edge of the tooth straight down $5/32$ " on a line pitched 12

degrees back of the center. At this point the gullet begins to curve very gradually for a short distance. The chip follows this curve easily and naturally, carrying it out of the gullet without sticking and filling up or carrying around into the cut again, which has caused more trouble from broken teeth and saws than all other difficulties encountered.

We make this saw in five sizes. For cutting the largest heavy-duty work to the smallest lighter work, where economy of material is particularly desired. We shall be glad to cooperate with you in your metal cutting problems. Write us giving full data and we will recommend the correct saw for your work.

SIMONDS SAW and STEEL CO.

ESTABLISHED 1832

"The Saw Makers"

FITCHBURG, MASS.

ment have quotations and estimates out on machinery, which, if orders resulted, would keep them busy throughout 1932. Present order books are sufficient for the greater part of the remaining months of this year on current operating bases.

New York

PLANS have been filed by Department of Hospitals, Municipal Building, New York, for two-story shop, automobile service, repair and garage building, and storage and distributing unit at city hospital, Welfare Island, to cost \$150,000 with equipment. B. Robert Swartburg, 2 West Forty-sixth Street, is architect.

National Screen Service, Inc., 126 West Forty-sixth Street, New York, is planning early call for bids for a seven-story industrial and operating building, 100 x 100 ft., to cost about \$275,000 with equipment. Berlinger & Kaufman, 232 Madison Avenue, are architects.

Board of Education, 500 Park Avenue, New York, has asked bids on general contract for new vocational and continuation school at St. George, S. I., to cost close to \$1,000,000 with equipment. W. C. Martin, Flatbush Avenue Extension and Concord Street, Brooklyn, is architect.

Inventool Mfg. Co., New York, recently organized by Martin M. Jay, 53 Clifford Place, Bronx, and associates with capital of \$20,000, plans operation of factory for manufacture of tools, dies, etc. Ezekiel Jasper, 1411 East Third Street, Brooklyn, is an incorporator.

William Shary, 22 East Seventeenth Street, New York, architect, has plans for a four-story automobile service, repair and garage building, to cost about \$125,000 with equipment.

Oscar Engstrom, 159 Leonard Street, New York, and associates have organized Engstrom Tool Corp., with capital of \$10,000, and plan operation of local factory for manufacture of tools, dies and kindred products. Louis Jarrell, 247 East Eighty-sixth Street, is interested in new company.

Union Township Board of Education, Union, N. J., has authorized installation of manual training department in new North End school to cost over \$200,000, for which bids are being asked on general contract until Aug. 21. Frederick A. Eisasser, Unionville, Union Township, is architect.

City Commission, Orange, N. J., is planning extensions and improvements in municipal electric light and power plant and waterworks pumping station, with installation of new machinery, to cost about \$435,000. Runyon & Carey, 31 Fulton Street, Newark, N. J., are consulting engineers.

City Commission, City Hall, Newark, is considering an addition to municipal automobile service, repair and garage building, to cost about \$300,000 with equipment. Department of City Affairs, Mayor Jerome T. Congleton, will be in charge.

Board of Education, Lodi, N. J., is planning installation of manual training equipment in new two-story and basement senior and junior high school to cost about \$340,000. Frank Pirrone, 104 Midland Avenue, Garfield, N. J., is architect.

A group of nine municipalities is having plans prepared for a sewage disposal plant for Rahway Valley Trunk Sewer, including pumping machinery and power equipment, to cost about \$375,000. Clyde W. Potts, 30 Church Street, New York, is engineer in charge.

Board of Education, Montclair, N. J., Richard T. Greene, president, is planning installation of vocational training department in addition to Glenfield School to cost about \$300,000. Starrett & Van Vleck, 393 Seventh Avenue, New York, are architects.

Passaic Valley Water Commission, 156 Ellison Street, Paterson, N. J., is asking bids until Aug. 10 for equipment for Great Notch pumping station, including two motor-driven centrifugal pumping units, each of 6,000,000 gal. a day capacity, with valves, piping, etc. Fuller & Everett, 25 West Forty-third Street, New York, are engineers. Paul L. Troast is secretary of commission.

Empire Sign Co., 201 East Twentyninth Street, New York, informs THE IRON AGE it has not leased a building at Long Island City for expansion and that the item in these columns last week was incorrect.

New England

PLANS are under way by Collins Mfg. Co., Suffolk Street, Holyoke, Mass., manufacturer of paper products, for a new power plant at mill at North Wilbraham, Mass., to cost about \$50,000 with equipment. McClintock & Craig, 458 Bridge Street, Springfield, Mass., are architects.

Department of Mental Diseases, State House, Boston, is asking bids on general contract until Aug. 11 for a new industrial school at Belchertown, Mass., to cost over \$100,000 with equipment. Kendall Taylor & Co., 209 Columbus Avenue, Boston, are architects; R. B. Kimball Co., 6 Beacon Street, Boston, is engineer.

McKesson & Robbins, Inc., Bridgeport, Conn., manufacturer of chemicals, etc., is acquiring property at Montreal as site for a new plant for which plans will soon be drawn, to cost close to \$1,000,000 with equipment. A boiler house will be built. W. M. Van Fant is president.

Board of Trustees, State School for Feeble Minded, West Pownal, Me., has plans for addition to power plant and mechanical laundry, to cost close to \$45,000 with equipment. Coombs & Harri-man, 11 Lisbon Street, Lewiston, Me., are architects.

Building Committee, Board of School Trustees, Groveland, Mass., Fred R. Hardy, chairman, is considering installation of manual training equipment in new two-story high school, for which bids will soon be asked on general contract, to cost about \$125,000. Harry L. Meacham Associates, 120 Front Street, Worcester, Mass., are architects.

Sewer Department, City Hall, Worcester, Mass., has plans for a new two-story industrial shop, equipment storage and distributing plant, to cost over \$140,000 with equipment. R. C. Gorrani, 175 Green Street, is architect.

D. C. Hooker, Farmington, Conn., and associates have organized Hooker Mfg. Co., Hartford, Conn., with capital of \$100,000, to operate a foundry at last-noted place. A. W. Bevin, Hartford, is interested in new company.

Board of Trustees, Soldiers' Home, Bennington, Vt., will ask bids on revised plans for new steam power house to cost close to \$40,000. Frank L. Austin, 240 College Street, Burlington, Vt., is architect; Alfred Kellogg, 585 Boylston Street, Boston, is engineer.

New Method Die & Cut-Out Co. announces removal of its plant to Gardner, Mass., where new factory buildings have been provided by Gardner Industrial Corp., an organization of business men in that city.

South Atlantic

BOARD of School Commissioners, Madison and Lafayette Avenues, Baltimore, is asking bids until Aug. 12 for equipment for machine shops at Baltimore Polytechnic Institute; also for open air class equipment and miscellaneous equipment and supplies for other schools. Specifications on file at office of Business Division of Board, 1230 East Twentieth Street.

Andrew J. Sauer & Co., Schaff Building, Philadelphia, architects, have awarded general contract to Frank G. Stewart, 1520 Locust Street, for three-story automobile service and garage building, 100 x 160 ft., to be erected in connection with new Medical Arts Building at Washington. Garage will have capacity of 170 cars and will cost over \$100,000.

Office of Public Buildings and Parks, Washington, is asking bids until Aug. 13 for a quantity of lead-covered wire.

Officials of Edward Katzinger Co., 1949 North Cicero Avenue, Chicago, manufacturer of bakers' tinware and kindred products, have organized August Maag Co., to take over and expand its subsidiary of same name, with local plant at Haven and Fleet Streets. Same interests have chartered A. & J. Kitchen Tool Co. to take over and expand A. & J. Mfg. Co., Binghamton, N. Y., manufacturer of kitchen utensils and bakers' tinware, lately acquired by Katzinger company.

Harford County Board of School Commissioners, Bel Air, Md., contemplates installation of manual training equipment in new two-story high school to cost over \$125,000 with equipment. Bids have been asked on general contract. John B. Hamme, York, Pa., is architect.

City Council, Rockville, Md., is planning installation of an elevated steel tank, with capacity of 100,000 gal., in connection with extensions in municipal waterworks, for which a fund of \$50,000 has been arranged.

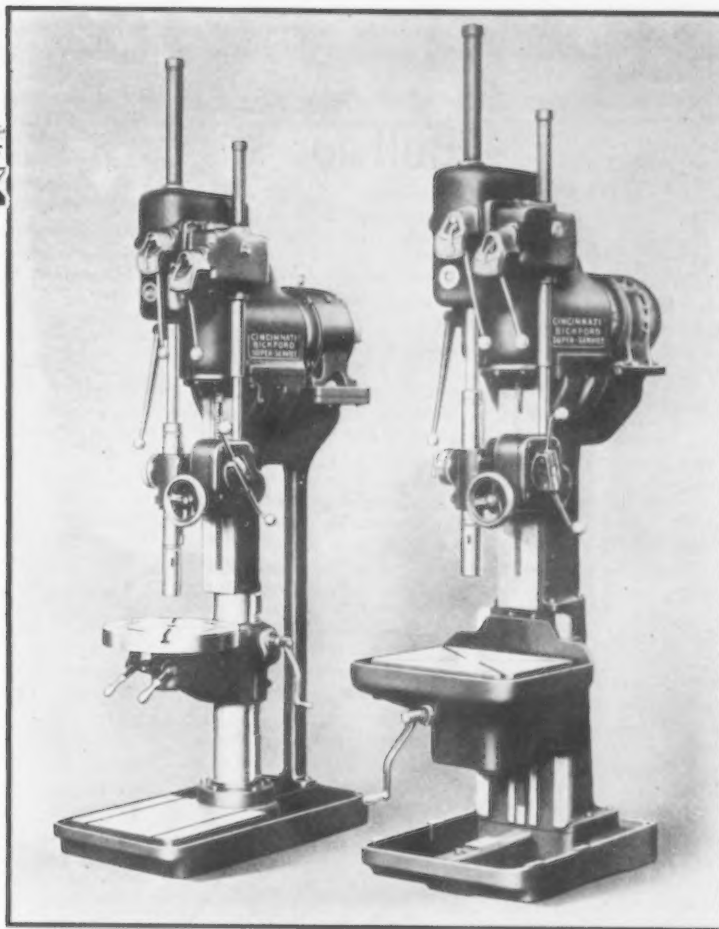
Dixie Flying Service, Inc., Wood Field, Charlottesville, Va., is planning to rebuild hangar units, with shop facilities, recently damaged by fire. New unit will be 75 x 80 ft., with 20 x 60 ft., lean-to for shop.

General Purchasing Officer, Panama Canal, Washington, is asking bids until Aug. 24 for tackle blocks, brass and copper pipe, steel tubing, wire rope, power cable, switchboard and other supplies.

J. H. Curtis Boat & Engine Corp., Norfolk, Va., care of Wolcott & Wolcott, Seaboard National Bank Building, attorneys, recently formed by J. H. Curtis and associates with capital of \$50,000, plans operation of local boat-building and repair plant.

United Furniture Co., Lexington, N. C., has awarded general contract to L. S.

New 21" and 24"
Super Service
Uprights



Round or Box
Column

12 geared speeds controlled by one lever.
9 geared feeds controlled by one lever.
Direct reading speed and feed plates.

In 57 Years of Drill Building We Have Built No Better Drill Press

Many times, in its 57 years of building fine drilling machinery, has this company pioneered, in its offerings of lower cost drilling, through refinement of drilling machinery.

Now it presents as the acme of drill press efficiency, two new all geared *Super Service Uprights*—21" and 24"—Round and Box Column Types.

Their excellence is at once apparent to drill users who consider the performance value of direct con-

nected driving motor, positive type feed clutch, automatic oiling, ball and roller bearings, alloy steel gears, single lever controls, etc.

Features of design and construction cannot be adequately presented in brief. Consequently, we urge you to send at once for your copy of Catalog U-20 which fully describes this equipment.

You cannot afford to overlook it if your production could possibly benefit by "*More Holes Per Dollar.*"

THE CINCINNATI BICKFORD TOOL CO.
OAKLEY, CINCINNATI, OHIO

Costner, Cherryville, N. C., for a two-story addition, 75 x 250 ft., to cost about \$30,000 with equipment. Portion of unit will be used as a finishing mill and remainder for storage and distribution.

Philadelphia

CONTRACT has been let by Dodge Steel Co., State Road and Hellerman Street, Philadelphia, to Sauter & Schwertner, 1505 Race Street, for a one-story foundry.

Schuch Machinery Co., Philadelphia, has been organized with capital of \$25,000 to take over and expand company of same name with plant at 235 New Street. New company will manufacture parts and assemble machines and produce mechanical equipment. Cornelius F. Schuch is head; George H. Neumann is treasurer.

Naval Aircraft Factory, Navy Yard, Philadelphia, is asking bids until Aug. 10 for 2000 engine control rod terminals, 100 engine controls and quantity of machine screw nuts.

In connection with expansion in gas properties, Central Public Service Corp., 224 South Michigan Avenue, Chicago, plans installation of mechanical coke-handling plant at gas works at Salem, N. J. Company will also rebuild artificial gas-generating station at Salisbury, Md., and install additional equipment.

Filler Machine Co., Inc., 1246 Montgomery Street, Philadelphia, manufacturer of canning machinery and parts, has awarded general contract to Charles B. Fleming, 1329 East Hewson Street, for one-story addition, 50 x 54 ft., for expansion in machine shop, to cost close to \$25,000 with equipment.

Airway Express Corp., Bordentown, N. J., care of William A. Klemann and Louis S. Kaplan, 33 West State Street, Trenton, N. J., architects, has plans for a new airplane hangar at Bordentown, with machine shop and reconditioning department, to cost about \$70,000 with equipment.

Delaware Power & Light Co., Wilmington, Del., has arranged for a bond issue of \$6,000,000, part of fund to be used for extensions and improvements in power plants and system, including artificial gas properties. Company is operated under direction of United Gas Improvement Co., 1401 Arch Street, Philadelphia.

John T. Lindstrom, 215 South Berks Street, and Charles A. Porter, 22 South Eighteenth Street, Allentown, Pa., have organized Strom-Port Mfg. Co., with capital of \$50,000, and plan operation of factory for manufacture of steam, water and gas equipment. Mr. Lindstrom will be president.

Charles Lennig & Co., Inc., Richmond and Kennedy Streets, Philadelphia, manufacturer of industrial chemicals, has taken out a permit for an addition to cost about \$100,000 with equipment.

Public Service Electric & Gas Co., Burlington, N. J., is planning erection of a steel tower transmission line from Burlington to point in Hamilton Township, near Trenton, N. J., to cost over \$90,000.

In connection with improvements in municipal waterworks, Borough Council, Carlisle, Pa., contemplates erection of steel standpipe with capacity of 250,000

gal., and installation of pumping machinery and other equipment. Fund of \$50,000 is being arranged for work.

Buffalo

BOARD of Education, Auburn, N. Y., contemplates installation of manual training equipment in new high school, to cost over \$200,000, for which bids have been asked on general contract. Hillger & Beardsley, Auburn, are architects.

New York State Electric & Gas Corp., Ithaca, N. Y., is planning for a new bond issue of \$17,000,000, part of proceeds to be used for expansion and improvements in plant and system.

Officials of Grange League Federation Exchange, Chamber of Commerce Building, Buffalo, have organized Co-Operative Grange League Federation Mills, Inc., a subsidiary, to handle farm supplies. New organization will lease feed and grain mills, a grain elevator, fertilizer plants, seed storage and distributing plant and a paint factory. Headquarters will be at Buffalo. J. A. McConnell, heretofore assistant general manager of Grange League Federation, will be president of new organization.

General Gas Steam Radiator Corp., Gowanda, N. Y., recently organized by Axel Schmidt, Gowanda, and associates with capital of \$155,000, plans operation of local works for manufacture of radiators and radiator equipment. John W. Pinner, Gowanda, will be an official of new company.

Cleveland

CONTRACT has been let by Sheets Elevator Co., 6529 Broadway, Cleveland, to Watts-Suhrbier Co., 1235 Miami Street, Toledo, Ohio, for two-story factory branch, storage and distributing plant, 50 x 80 ft., at Toledo, to cost about \$20,000.

M. P. Lauer, Pythian Building, Akron, Ohio, architect, has plans for a four-story automobile service, repair and garage building at Warren, Ohio, to cost close to \$100,000 with equipment.

Porcelain & Refractories Co., Wellsville, Ohio, care of G. L. Brokaw, 108 East Sixth Street, East Liverpool, Ohio, recently organized, plans operation of plant at Wellsville for production of refractories. Walter E. Skidmore and Bruce J. Yonz, Wellsville, are interested in organization.

Board of Trustees, Ashtabula General Hospital, Ashtabula, Ohio, will soon ask bids for new power house and mechanical laundry to cost over \$60,000 with equipment. Clarence V. Martin, Johnston Building, is architect.

Ratchet Lock Nut Co., Inc., has been organized at Lepsic, Ohio, and has leased a plant for manufacture of lock nuts. R. R. Bunting is president.

Cincinnati

PLANs are under way by Midwest Farm Equipment Co., Battle Creek, Mich., manufacturer of farming tools and implements, for removal of plant to Circleville, Ohio, where property is being

acquired. It is proposed to have new factory in operation early in September.

Louisville Gas & Electric Co., Louisville, is planning extensions and improvements in transmission lines and power substations in city and vicinity, to cost about \$500,000 including equipment. Transmission line will be built to connect with hydroelectric generating plant at Ohio Falls.

Henry Fischer Packing Co., 1862 Mellwood Avenue, Louisville, is planning installation of equipment in four-story addition, 70 x 90 ft., to meat-packing plant now under way. New unit represents total investment of about \$85,000.

Contracting Officer, Wright Field, Dayton, Ohio, is asking bids until Aug. 12 for quantity of gaskets, cap assemblies, cap and adapter assemblies; until Aug. 17 for 880 landing gear collars, nuts, washers, etc., 170 struts and 180 clamp assemblies; until Aug. 18 for bushings, collars, gear assemblies, tube assemblies, windlass assemblies, etc.

Putnam County Board of Education, Cookeville, Tenn., is considering installation of manual training equipment in new central County high school near Cookeville to cost about \$125,000. Marr & Holman, Stahlman Building, Nashville, Tenn., are architects.

Bowling Green Refining Co., Bowling Green, Ky., is planning erection of a new oil refinery, to cost over \$85,000 with machinery.

Champion Coated Paper Co., Hamilton, Ohio, is planning expansion, including installation of equipment for production of ground wood pulp, for production of pulp boards and kindred pulp products.

Hutchison Engineering Co., Nashville, Tenn., has completed new one-story plant for production of metal specialties, metal toy games, electric clock mechanisms and kindred products. A nickel-plating unit will be operated in conjunction with works. W. C. McCann is secretary and treasurer; Lawrence W. Hutchison is engineer in charge of production.

St. Louis

CONTRACT has been let by Monsanto Chemical Works, 1724 South Second Street, St. Louis, manufacturer of industrial chemicals, to Woermann Construction Co., 3800 West Pine Boulevard, for one-story addition to storage and distributing plant at East St. Louis, Ill., 92 x 171 ft., including improvements in present unit, to cost about \$100,000 with equipment. Hoener, Baum & Froese, 3605 Laclede Avenue, St. Louis, are architects.

Loose-Wiles Biscuit Co., 1100 West Eighth Street, Kansas City, Mo., is considering erection of new branch plant at Los Angeles, including storage and distributing building, to cost over \$1,000,000 with machinery.

City Council, Heavener, Okla., is planning installation of electric-operated pumping machinery and auxiliary equipment in connection with improvements in municipal waterworks to cost about \$75,000. V. V. Long & Co., Colcord Building, Oklahoma City, Okla., are engineers.

Oklahoma Aviation Service, Inc., Municipal Airport, Oklahoma City, Okla., has taken bids on general contract for one-story and basement hangar, 120 x

ANNOUNCING

The Motor Operated Chuck

- It is wrenchless, chip-proof, motor-controlled.
- Electric power is used ONLY during the chucking cycle.
- Motor operates at full speed before picking up load, and delivers a hammerblow to the nut, causing it to release.
- Power cost insignificant (test showed 900 chuckings cost 2c for current).
- It makes the lathe a self-contained unit.

Lathe users will be quick to make use of the advantages of a chuck working at the throw of a switch, requiring but one and one-half seconds to make the full movement of 1". For less jaw movement, the time is correspondingly reduced. The Chuck is positively locked during the entire machining cycle, and requiring insignificant power to operate. . . .

Such with many refinements, safeguards and exclusive patented features, is the new Cushmatic Electrically Operated Chuck.

Consider These Cushmatic Advantages:

1. Power saving alone should permit chuck to pay for itself in a short time.
2. Rapid, simple operation assures greater production on chucked work.
3. Ample and adjustable gripping power eliminates chatter in machining.
4. Installation greatly simplified by the one power source—no compressors, air lines, hydraulic oil lines, etc.

No work will be spoiled because of insufficient grip.

No work need be spoiled because of too much grip as rheostat allows several reductions from maximum pressure.

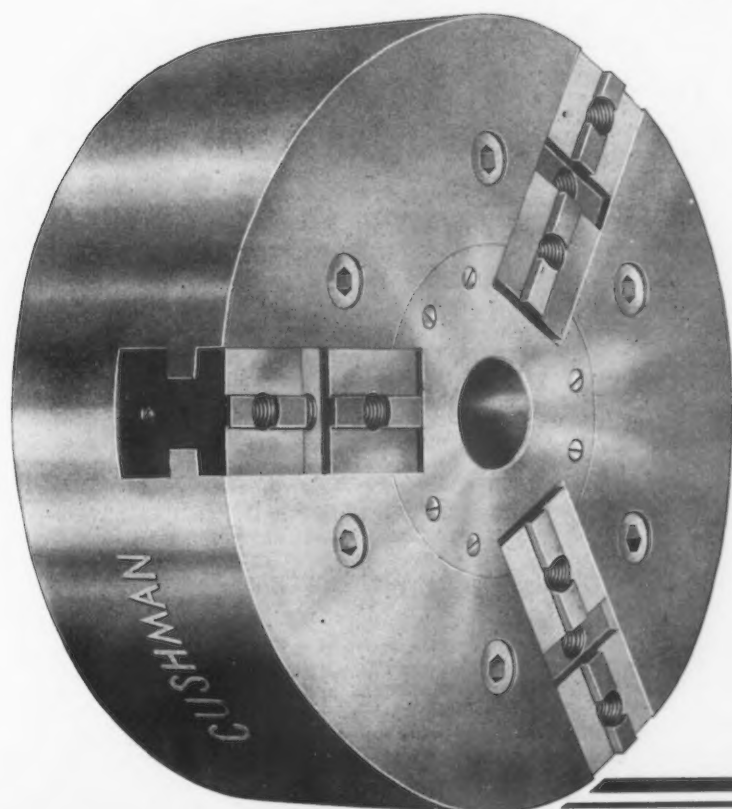
ANY LATHE adaptable to compressed air or hydraulic chuck operation can be maintained with a Cushmatic.

ANY CHUCK now operated with compressed air or hydraulic power, can be operated by the Motor Power Unit of the Cushmatic.

Full details in the bulletin.

SIZES:

8 in., 10 in., 12 in., 15 in., 18 in., 21 in., 24 in.
Two Jaws — Three Jaws.



The CUSHMATIC ELECTRICALLY OPERATED CUSHMAN CHUCK

THE
CUSHMAN
CHUCK CO.

HARTFORD, CONN., U. S. A.

140 ft., with shop facilities, to cost about \$35,000 with equipment. Langbein & Johnston, Hightower Building, are architects.

City Council, Pawhuska, Okla., is arranging a bond issue of \$46,762 for extensions and improvements in municipal electric light and power plant, including equipment.

Great Lakes Pipe Line Co., Fairfax Industrial District, Kansas City, Kan., has plans for a new oil storage and distributing plant on 30-acre tract recently acquired at Omaha, Neb., with initial capacity of 95,000 bbl. Project will include a one-story gasoline blending plant to cost over \$85,000.

Bridge & Beach Mfg. Co., St. Louis, has been organized to take over and expand company of same name, with plant at 4204 Union Street, manufacturer of stoves, ranges, etc. H. E. and G. L. Bridge head new organization.

Detroit

CONSTRUCTING Quartermaster, Selfridge Field, Mount Clemens, Mich., has awarded general contract to Banbrook-Gowan Co., 4829 Woodward Avenue, Detroit, for air corps machine shop, assembling shop, four double airplane hangars, with repair facilities, storage and distributing unit, to cost over \$250,000 with equipment. Quartermaster will receive bids until Aug. 31 for a gasoline fueling system at airport.

Independent Gas Cock Co., Jonesville, Mich., manufacturer of brass goods, etc., has approved plans for remodeling former plant of Burwood Products Co., Port Huron, Mich., recently acquired for new plant.

Tool Shop Hardware Co., 463-65 Michigan Avenue, Detroit, is planning to rebuild part of works recently destroyed by fire, with loss over \$50,000 including equipment.

Harry C. LeVine, 307 Hobart Street, S. E., Grand Rapids, Mich., and associates have organized Double Action Mfg. Corp., 30 Michigan Street, N. W., and plan operation of local factory for manufacture of electrical equipment and appliances. Silas F. Albert, Grand Rapids, is interested in new company.

Lennert Aircraft Co., Pentwater, Mich., is arranging to place its local plant on a full production schedule for manufacture of all-metal airplanes, for which license is being issued by Bureau of Aeronautics, Washington. Company is planning establishment of branch service and sales agencies in different parts of country.

Great Lakes Fruit Industries, Inc., Ludington, Mich., has plans for a new cold storage and refrigerating plant, to cost over \$40,000 with machinery. Homer Harper, Benton Harbor, Mich., is architect.

Besser Mfg. Co., Alpena, Mich., manufacturer of automatic concrete mixing machines and parts, has secured a substantial financial interest in Consolidated Concrete Machinery Corp., Adrian, Mich., manufacturer of machinery for production of concrete blocks, etc. There will be no change in operations at present.

Chicago

BIDS will be received by Procurement Officer, Air Corps, Chanute Field, Rantoul, Ill., until Aug. 10 for one motor-generator set, and one tank rheostat.

W. P. Lillibridge, St. Charles, Ill., has begun erection of new grain mill and elevator, to include installation of elevating, conveying, screening and other equipment, to cost over \$70,000.

Leader Industries, Inc., Decatur, Ill., has been organized to take over and expand a local works, specializing in production of tanks and other steel products. New company will have headquarters at 2100 North Jasper Street. John R. Fitzgerald and Arthur F. Delahunty, Decatur, are principal incorporators.

Central West Public Service Co., Third Street, Sioux City, Iowa, is planning to rebuild ice-manufacturing plant at South Sioux City, Neb., recently destroyed by fire with loss of about \$100,000 including equipment.

Colorado Fuel & Iron Co., Pueblo, Colo., has approved plans for a new coal briquet-manufacturing plant, to cost about \$100,000 with machinery. George MacPhail is engineer in charge.

Otter Tail Power Co., Fergus Falls, Minn., has plans for an addition to steam-operated electric power plant at Wahpeton, N. D., to cost over \$60,000 with equipment. G. W. Welch is chief engineer.

Kleen Heet, Inc., Chicago, recently organized to take over and expand Kleen Heet Co., 844 Rush Street, manufacturer of oil burners and oil-burning equipment, has purchased Winslow Boiler & Engineering Co., same address, also manufacturer of oil burners, parts, etc., and will operate as unit of organization. J. H. Hirsch, president of Automatic Burner Corp., 1823 Carroll Street, has been elected president of Kleen Heet, Inc., continuing in both offices.

Board of Administration, State Teachers College, Valley City, N. D., is asking bids until Aug. 15 for two underfeed mechanical stokers.

Milwaukee

BOARD of Vocational Education, Racine, Wis., closes bids Aug. 17 for erection of south wing unit, 62 x 122 ft., four stories and basement, on Center Street. Plans are by Frank J. Hoffman, local architect. Investment will approximate \$250,000. Thomas E. Rees is director and Edward Neumann is secretary of board.

Valley Sheet Metal Works, Neenah, Wis., has placed general contract with C. R. Meyer & Sons Co., 50 State Street, Oshkosh, Wis., for one-story manufacturing and office addition, 60 x 120 ft. Smith & Brandt, Appleton and Manitowoc, Wis., are architects.

Board of Education, Madison, Wis., has accepted bid of J. H. Findorff & Son, Madison, for four-story addition, 70 x 400 ft., to East Madison High School, at \$293,000. Vocational, laboratory and other equipment will be purchased later. Architect is Frank Riley, 24 East Mifflin Street, Madison.

Johnson Machine Works, 619 Menomonie Street, Eau Claire, Wis., has broken ground for an addition to its machine shop, to cost about \$25,000 with equipment.

Common Council, Green Bay, Wis., has commissioned J. S. Hart, consulting engineer, 122 West Washington Avenue, Madison, Wis., to make survey and prepare specifications for electrification of pumping station of municipal waterworks system. Work is to be started by Oct. 1. M. P. Doherty is city clerk.

Hell Co. 3000 West Montana Street, Milwaukee, manufacturer of steel dump bodies, hydraulic hoists and other equipment, has placed contract with Klug & Smith Co., Mack Block, for new yard crane runway, 40 x 195 ft.

Pittsburgh

CONTRACT has been let by Superior Paper Products Co., Carnegie, Pa., to A. A. Lane Construction Co., 1869 East Fifty-fifth Street, Cleveland, for one-story and basement addition, 80 x 180 ft., to cost about \$65,000 with equipment. Braziell & Anderson, 309 Fourth Avenue, Pittsburgh, are architects.

Pittsburgh Terminal Coal Corp., Washash Building, Pittsburgh, will soon begin construction of a mechanical coal-washing plant at Avella, Pa., to cost over \$40,000 with equipment.

West Penn Power Co., West Penn Building, Pittsburgh, is disposing of a bond issue of \$10,000,000, proceeds to be used in part for extensions and improvements in power plants and system. Company is operated by American Water Works & Electric Co., 50 Broad Street, New York.

Kerr & Sink Mfg. Co., Homer City, Pa., recently organized by H. E. Kerr and John E. Sink, both of Homer City, with capital of \$25,000, plans operation of local factory for manufacture of store fixtures, butchers' machinery, implements, etc.

Pond Creek Pocahontas Coal Co., Bluefield, W. Va., has awarded general contract to Walton-Sudduth Co., Bluefield, for coal-mining plant near Slate Creek, to cost about \$200,000 including loading, conveying and other equipment.

Woodings Forge & Tool Co. and Verona Tool Works, both of Verona, Pa., have been consolidated as Woodings Verona Tool Works, with E. Woodings as executive head.

Indiana

BOARD of Education, Angola, is considering installation of manual training equipment in new two-story and basement high school to cost about \$160,000, for which plans will be drawn by Pohlmeier & Pohlmeier, Central Building, Fort Wayne, architects.

P. R. Mallory & Co., 3029 East Washington Street, Indianapolis, manufacturers, of high voltage radio condensers, parts, etc., are carrying out expansion to double present capacity.

Sunbeam Electric Mfg. Co., 225 West Morgan Street, Evansville, manufacturer of isolated electric lighting plants, headlights and kindred equipment, has awarded general contract to M. J. Hoffman Construction Co., Central Union Building, for a one-story addition to cost close to \$40,000 with equipment.

William Gonnerman and E. H. Furrer, Mount Vernon, have organized

The Engineering and Research Building, A. O. Smith Corporation, Milwaukee. Its conception and execution mark it as a great step in industrial progress.



DEDICATED TO RESEARCH

. . . and protected by **DURIRON**
from the ruin of corrosive wastes

A monumental achievement in industrial history is the new Engineering and Research Building of A. O. Smith Corporation, Milwaukee. Devoted exclusively to the engineering and research activities of the company, there probably is no other industrial building just like it.

In such a building, so modernly equipped, with foresight for the future, it is only natural that the matter of acid wastes from the various laboratories should receive due attention. There could be no costly damage from leaks. Replacement expense must be avoided. Duriron corrosion-resistant drain-pipe, fittings, sink strainers and traps were consequently installed as the most vital part of the drainage system.

From extensive experience with Duriron equipment for handling acids, A. O. Smith Corporation know that Duriron in the new building will serve as a practically permanent installation, for Duriron is highly resistant to corrosion *inside, outside and all the way through*. Let us tell you how Duriron can help you.

THE DURIRON COMPANY, INC.
438 N. Findlay St. Dayton, Ohio

DURIRON
ACID
PROOF
DRAIN-PIPE

Hydro Safety Aircraft Corp., and plan operation of local factory for manufacture of airplanes and parts. C. F. Kimball, Mount Vernon, is interested in company.

Somerville Mining Co., Princeton, is planning to rebuild part of plant at Somerville Coal Mine No. 1, recently destroyed by fire, with loss of about \$25,000 including equipment.

Gulf States

PLANS are being considered by Humble Oil & Refining Co., Houston, Tex., for a new oil refinery near Gladewater, Tex., to handle output from east Texas oilfields, to cost over \$200,000 with equipment.

Rule Oil Mill Co., Rule, Tex., is planning to rebuild part of oil refinery recently destroyed by fire, with loss more than \$75,000 including equipment.

Poinsettia Dairy Products, Inc., Marion and Cass Streets, Tampa, Fla., plans installation of bottling machinery, refrigerating, conveying and other equipment in new plant to cost close to \$100,000. An automobile service and garage unit will be built for company trucks and cars. Frank A. Winn, Jr., 207 Twiggs Street, is architect.

State Board of Control, Austin, Tex., is asking bids until Aug. 19 for equipment for new unit at Central State Farm, near Sugarland, Tex., and for State prison system, including elevators, packing plant machinery, dairy machinery, laundry equipment, builders' hardware, etc., specifications on file at Builders' Exchange, Austin, San Antonio and Houston, Tex.

Constructing Quartermaster, Randolph Field, Tex., is asking bids until Aug. 19 for installation of gasoline fueling system.

Woodley Petroleum Co., Kilgore, Tex., is considering erection of a new oil refinery about three miles from city, to cost over \$100,000 with machinery.

Constructing Quartermaster, Fort Sam Houston, Tex., is asking bids until Aug. 24 for a one-story engineering shop, boiler house and other structures at Duncan Field, Tex.

Southwestern Gas & Electric Co., Shreveport, La., has authorized erection of a transmission line from local Arsenal Hill generating plant to Marshall, Tex., to cost over \$65,000 with equipment.

United Air Lines, 400 South Michigan Avenue, Chicago, has plans for new hangar at Love Field, Dallas, Tex., with shop facilities, also passenger terminal on adjoining site, to cost about \$100,000 with equipment. A. Epstein, 2001 West Pershing Road, Chicago, is engineer.

Board of Education, Galveston, Tex., contemplates installation of manual training equipment in new two-story school for negroes in West End section to cost about \$200,000, for which bids will soon be asked on general contract. Mark Lemmon, Construction Building, Dallas, Tex., is architect.

Pacific Coast

PUBLIC Works Department, Eleventh Naval District, San Diego, Cal., will receive bids until Aug. 18 for a refrigerating plant for naval operating base and air station.

Power equipment, conveying, refrigerating and other machinery will be installed in new two-story and basement plant, 137 x 200 ft., to be erected by Challenge Creamery & Butter Association, 307 Montgomery Street, San Francisco. Dodge Riedy, Pacific Building, is architect.

Board of Education, Sacramento, has plans for a one-story addition to high school for a manual training shop, to cost \$40,000 with equipment. Jens C. Petersen, 826 Twenty-sixth Street, is architect.

Pacific Hardstone Brick Co., 416 West Eighth Street, Los Angeles, Murray T. Cox, representative, will erect new brick-manufacturing plant on 40-acre tract recently acquired, to cost over \$70,000 with machinery. Schuck Construction Co., 1937 West Sixty-second Street, is architect and is expected to receive general contract.

Pacific States Pulp & Paper Co., Hut-ton Building, Spokane, Wash., is considering erection of a new sulphate pulp mill near Okanogan, Wash., to cost close to \$90,000 with machinery.

Bureau of Reclamation, United States Customhouse, Denver, is asking bids until Aug. 17 for two direct pumping units for Wippel pumping station, Kittitas Division, Yakima project, Wash. Bureau is planning call for bids for power plant machinery at Prosser, Wash., and for a pumping plant near Kennewick, Wash.

Globe Grain & Milling Co., 907 East Third Street, Los Angeles, is planning to rebuild grain milling plant at Vernon, Cal., destroyed by fire, July 28, with loss more than \$350,000 including machinery.

Wire Rope Mfg. & Equipment Co., First Street South and Jackson Avenue, Seattle, has plans for rebuilding one-story plant recently destroyed by fire, with loss of about \$150,000 including equipment.

Everett Pulp & Paper Co., Everett, Wash., has acquired plant and property of Cascade Paper Co., West Tacoma, Wash., and will remodel for a new branch mill to specialize in production of book and writing papers. William Howarth is president and treasurer of purchasing company.

Canada

PLANT formerly occupied by British Canadian Packing Co., East St. John, N. B., has been taken over by Corporate Steel Products, Ltd., for manufacture of sheet-metal products for distribution in Maritime Provinces. Corporate Steel Products, Ltd., is holding company of George W. Reed Co., Ltd., Montreal; Ottawa Sheet Metal Co., Ltd., Ottawa; Metallic Roofing Co., Ltd., Heather & Little, Ltd., Toronto; Canada Metal Products, Ltd., and Western Steel Products, Ltd., Winnipeg.

Maytag Canadian Co., Ltd., has obtained premises at 723 Portage Avenue, Winnipeg, for manufacture of washing machines, etc.

Silent Glow Oil Burner Co., Hartford, Conn., will establish a plant on St. Hubert Street, Montreal, for manufacture of oil burners, etc.

Parker Steel Shoe Co., Preston, Ont., will build an addition to cost \$25,000.

Town Council, Summerland, B. C., is inquiring for two waterworks pumps, one of 318-ft. friction head capacity, and one of 130-ft. head capacity. A. L. McNaughton is engineer.

Foreign

OFFICIALS of Procter & Gamble Co., Cincinnati, manufacturer of soaps, etc., have organized Sabates, S. A., to take over plants and property of Sabates S en C., Havana, Cuba, manufacturer of kindred products, and its subsidiary, Perfumeria Thesalia, S. A., recently acquired. Juan Sabates, heretofore head of acquired company, will continue as president and general manager. Expansion is planned.

Government of Argentine Republic, Buenos Aires, has closed negotiations with Curtiss-Wright Corp., River Road, Buffalo, N. Y., for exclusive manufacturing rights for that company's line of aircraft engines in Argentina. Agreement provides for manufacture of at least 250 complete aircraft motors over a term of five years. Company will soon begin production of quantity of spare parts and number of complete motors, for shipment to Argentina.

Following acquisition of controlling interest in Cuban Manganese Corp., Cristo, Cuba, by Freeport Texas Co., 122 East Forty-second Street, New York, plans are under way for development of manganese properties. Concentration plant will be developed to a capacity of 1000 tons of ore for output of about 300 tons of concentrates. Consolidated Railroads of Cuba, Havana, is planning construction of a new branch line to company's properties from Santiago.

Soviet Russian Government, Moscow, has arranged appropriation of 25,000,000 rubles (about \$12,500,000) for group of 17 plants during next six months for production of synthetic cotton under a special process invented by Institute for Experimental Research, Moscow. Each plant will represent investment of close to \$735,000 with machinery. Project will be carried out under direction of Alexander Krasnoschekov, chairman of Trust for Textile Fibers. Amtorg Trading Corp., 261 Fifth Avenue, New York, is official buying agency for Soviet Union.

Department of Public Works, Mechanical Division, Cairo, Egypt, is asking bids until Sept. 1 for four marine Diesel engines for coal barges, including gears and auxiliary equipment for 150-hp. rating each.

New Trade Publications

Switch Gear Apparatus.—Westinghouse Electric & Mfg. Co. Circular 1915, listing installations of company's metal enclosed switch gear with many photographs and complete descriptions. Circular 1899, providing more detailed description of this type of equipment.

Hobs, Milling Cutters and Reamers.—Barber-Colman Co., Rockford, Ill. Catalog "H," 200 pages, is divided into three sections, devoted respectively to standard and special hobs, hobbing machines and engineering information pertaining to gear cutting; standard and special milling cutters; and reamers and a reamer sharpening machine. Price and dimension tables, as well as highly useful engineering data and diagrams, are included; also tables of spline-shaft dimensions and instructions for using spline-shaft hobs with



discuss

AUTOMATIC ARC WELDING



"Today someone went so far as to tell me that we could get stronger and more ductile welds if we used the Shielded Arc process in automatic welding."



"Then someone is right in the short distance he went. They ARE stronger because by this process you get welds having a tensile strength of 65,000 to 80,000 lbs. per square inch, and ductility equivalent to that of mild rolled steel."



"You mean to say he should have gone further?"



"Certainly, or at least far enough to tell you that with the completely shielded arc of the Electronic Tornado, you get in addition, resistance of the weld to corrosion even greater than the above-mentioned mild rolled steel."



"Well, that's going considerable distance."



"Yes, distance, but it doesn't take into consideration the unusual speed in covering distance. For instance, with the Electronic Tornado you can automatically butt weld $\frac{1}{4}$ " plate at the rate of 60 feet per hour—and you can lap weld it at 65 feet per hour."



"Those are fine claims, lad, but how can we be sure that they're not simply claims?"



"That's easy—just call in a Lincoln welding engineer. He'll survey the job to be done and he'll hand you a written guarantee that the Electronic Tornado will do the job at the stated speed and cost. You see, you just can't lose when you deal with

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THE LINCOLN ELECTRIC COMPANY, CLEVELAND, OHIO

Largest Manufacturers of Arc Welding Equipment in the World

W-184

Business as Others See It

Digest of Current Financial and
Economic Opinion

STEEL corporation reports seem to have stolen the stage from the debt moratorium. Not that the latter is not deeply rooted in one's consciousness, but the unexpectedly meager earnings of the large steel units have given us more to think about here at home.

Such a view is gathered from a variety of sources. *Financial Chronicle* voices regret that United States Steel made "no positive announcement of a determination to lower wage scales. . . . A point has now been reached . . . where improvement can be brought about only through some reduction in labor costs."

With the estimate that only 12 to 15 per cent of our industrial plants have lowered wages, that paper says: "In 1921, as a result, presumably, of 92 per cent [of the plants] reducing wages, thereby permitting lowering costs to that extent, . . . business revived almost immediately, which was natural, as it meant an immediate readjustment to changed conditions. Whereas during the two years since 1929, in which the opposite policy has been pursued, preventing the readjustment to new conditions so imperative, all evidence of trade revival has been completely lacking."

Annalist hints at the same thing, calling the no-reduction-of-wages stand "increasingly embarrassing to the Administration. . . . It has been obvious for some time that for many establishments wage reductions have been not a matter of policy but of necessity."

Drastic dividend cutting leads *Financial Chronicle* to remark: "Captains of industry must carefully consider whether justice to

the unemployed, to the farmers and to the great number of citizens who have invested their savings in industries and in railroads does not call for a readjustment of wages which will permit products to be produced at lower cost," etc.

Conditions Abroad Delay Us

German credit collapse has held up our own start toward recovery, according to Brookmire. That, together with the lack of a large building movement, will make it "probably necessary to await another spring season for any decided and sustained recovery." And, as the present "depression has dragged out beyond the limits assigned by the most pessimistic [a point noted also by Harvard Economic Society] . . . it now looks as though there might be rather sharp gains in 1932, attaining somewhat better levels and enduring somewhat longer than earlier anticipated."

Recovery is expected by Brookmire to be "most pronounced in consumption goods. Output of capital goods, while some improvement may be expected, will participate but moderately in the advance."

Things are looking up here. Harvard Economic Service says: "Were it not for the crisis in Central Europe, recent developments in the domestic business situation would definitely indicate that business recovery is in progress in this country and would presently be accelerated. . . . That the unsettled foreign situation will slow down the pace of business recovery here, though it may not delay or prevent such recovery, is clear."

"Flight of capital" from Berlin and from London has driven both

centers to take steps to "right their own financially disordered houses," according to a leading financial authority.

Some Things Look Better

Meantime *Annalist* finds a number of good straws in the wind. Automobile output in June (adjusted) is reported below retail sales, auguring better operations later. Electric power output (adjusted) has held and extended its recent sharp gain. Wool machinery activity is increasing and Manchester, N. H., "reports the greatest [shoe-making] activity in years." While the steel reports were bad, other leading companies show increases (allowing for seasonal fluctuations).

Alexander Hamilton Institute refers to "the 6.5 per cent reduction in wages which has taken place since 1929" as "a step in the natural process of curing unemployment." The sequence of results, in the argument, is familiar.

Silberling, noting recent industrial earnings statements, concludes that "stocks in many of the groups are still not thoroughly deflated." But, unless there be serious new troubles abroad, clear sailing appears to be ahead, though "we must continue to adjust still lower many of our estimates of earnings for the entire year."

Many of the farmers are not so badly off, according to the Corn Belt Farm Dailies, Chicago. "About 70 per cent of all farm products find their way to market in the form of live stock products. Those who . . . feed their crops to animals . . . are not doing so badly . . . and are, in fact, better off than the great majority of city people."

special reference to the new elongated-tooth hob.

Speed Reducers.—Palmer-Bee Co., 1701 Poland Avenue, Detroit. Illustrated 64 page catalog No. 53 describes herringbone, worm and spur gear speed reducers with dimension and rating tables. Also high-speed and mill-type flexible couplings.

Milling Machines.—Kearney & Trecker Corp., Milwaukee. New models of "Milwaukee" milling machines, including universal, plain, manufacturing and sliding head vertical types, are illustrated and described in bulletin No. 49, 8 pages.

Motor Pulleys.—Reeves Pulley Co., Columbus, Ind. Illustrated folder, describing operating principle, construction details, etc., of a vari-speed mo-

tor pulley. Engineering data are included.

Combustion Steam Generator.—Combustion Engineering Corp., New York. Catalog SG-1, 20 pages, illustrated, describing combustion steam generator, a single unit embodying in an integral design the several elements required in the production of steam. Maximum efficiency and minimum operating and maintenance costs are claimed.

Starters.—Allen-Bradley Co., Milwaukee. Circular letter-folder describes and illustrates compression resistance starters for electric motors.

Electric Furnaces.—H. O. Swoboda, Inc., Pittsburgh. "Falcon" straight-line continuous electric furnaces for heat treating ferrous and non-ferrous

strip metal and wire are described and illustrated in Bulletin No. 260.

Industrial Heating.—W. S. Rockwell Co., 50 Church Street, New York. Bulletin 294 deals with economics of industrial heating. The problem of selecting heating equipment is discussed, also.

Welding Stubs.—National Valve & Mfg. Co., Pittsburgh. Illustrated folder, devoted to descriptive matter on Navco welding stubs, which combine features of the lap joint and the welding flange, for field-welded installation.

Heating Furnaces.—Ryan, Scully & Co., 3711 Wissahickon Avenue, Philadelphia. Bulletin 15A, describing and illustrating R-S standard electric heating furnace, type C, for small-parts heat treating, rivet and forge stock heating.

